

Flight Simulator **WORLD**



December/January 2002

Vol. 8 No. 6

USA \$7.95/CAN \$9.95

This Month Features...

FS 2002 Review!

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FS2002 Tricks & Tips

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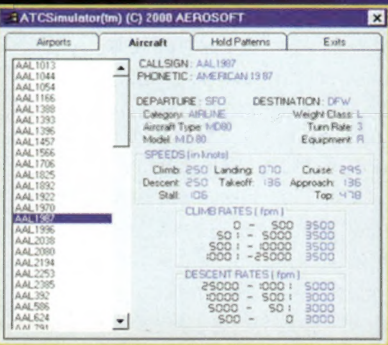
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ATC Simulator puts you to work inside the TRACON - at over 48 U.S. TRACONS - and in front of a real radarscope as the departure or approach controller. You are the controller and it's your job to safely sequence the aircraft, carrying thousands of passengers, for arrivals and departures in your busy airspace.

To the uninitiated, they're all just blips on the screen, but to the seasoned Air Traffic Controller, which is what you'll become, it's a challenging 3 dimensional puzzle solved by coolly and calmly, sequencing, vectoring and stepping 'em down to create that "string of pearls" that has them lined up on final and ready to be handed over to the tower.

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ARRIVALS (21)

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MD80R PC1	DFW	2100	090 050	126.55
BSV950	DFW	2100	090 050	
SW4R PC1	DFW	2100	090 050	126.55
AAL93	DFW	2102	090 006	
HBT57IA PC1	DFW	2102	090 006	126.55

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Minimum System Requirements: IBM compatible Pentium II 300 or higher PC, Windows 98/2000/Me, 64Mb RAM, Sound Card.
Optional: Headset with boom microphone for voice recognition option. Success with voice Recognition is not guaranteed. Some users will achieve great success with V/R and some will achieve less than satisfactory performance due to accent variations and quality of headset equipment.



One of your challenges is to turn chaos into orderly flow of traffic on final approach - the "String of Pearls". Shown here is SCT - Southern California TRACON.

Also order from any of these online dealers.

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Simware Simulations: www.simw.com RC Simulations: www.rcsimulations.com

Available at these retail stores in the USA: CompUSA, Electronics Boutique, Babbages, MicroCenter, Virgin MegaStore and other software stores where great software is sold.

Europe: For availability in stores in Europe call Profisoft in Germany on +49 541 122 065

Volume 8 Number 6 December - January 2002

Flight Simulator World (ISSN 1530-5007) is published bimonthly by Abacus, Inc. Printed in the U.S.A.

Prices Domestic \$39/year (\$7.95 each)
Canada \$44/year
Outside N.A. \$49/year

Phone Toll Free 800-451-4319
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Grand Rapids, MI 49512 U.S.A.
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Postmaster

Periodical postage is paid at Grand Rapids, MI and additional mailing offices.
Postmaster: Send address changes to:

Flight Simulator World
5376 52nd Street SE
Grand Rapids, MI 49512

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Pilot's Note: This information is not intended for use in actual flying situations. While the information is as realistic as possible, you should not use it for actual flying instruction. *Safe flying!*

From The Editor

Tim Dickens, Managing Editor



The holiday season is upon us once again, and of course, every flight simmer has his own wish list of what he or she would like to add to their virtual aviation environment. As is the case every year, this holiday issue features a lot of hardware and peripheral accessory information for you to use in completing that all-important shopping list. And don't forget your fellow flight simmers during your holiday shopping spree!

We also have a brand new version of Microsoft Flight Simulator, and this issue features a complete review of the new edition: Flight Simulator 2002. This latest version brings even more realism to the simulation environment, and if you have been a hold out over the years in getting a top quality yoke/joystick, rudder and throttle setup, now is the time that you might want to reconsider. The more real the simulation gets, the more that budget model joystick just does not cut it. Rod White's holiday gift guide, along with his other hardware and peripheral features, should serve you well during your quest for the ideal PC aviation setup.

Patience is a Virtue

As is the case with every new version of Microsoft Flight Simulator, there are slick new features and capabilities available to you. It is certainly natural that everyone wants to immediately port their favorite add-on scenery, aircraft and panel into the new simulator. Sometimes the transition is seamless, and sometimes not. Please be patient with your friendly flight sim developer. It often takes time to adapt the new technology. I find it curious that, only hours after FS 2002 hits the shelves, people are on the Internet forums, inquiring why this-and-that add-on is not fully compatible. And often taking a very demanding tone. C'mon folks, give the developers a break.

Before long I am quite sure many of your favorite add-ons will be brought up to speed. This may not be true of all programs, as some things just become obsolete. For example, FS 2002 now features an ATC environment. Although some may argue that the quality of the ATC is not as good as that of their favorite pre-programmed Adventure generator, I think most simmers will likely stick to the built in system. So you may or may not see a new version of your favorite Adventure generator. Only time will tell.

This new version of Flight Simulator opens up even more possibilities for add-on scenery, aircraft and panels. I think we are in store for a lot of exciting new add-ons in the future. And we will be here to keep you up to date.

Keep the blue on top!

About this month's cover

Matt Ridgway has again performed his magic in designing and creating the cover for this month's *Flight Simulator World*.

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Microsoft FS2002 includes real-time, interactive ATC, beautiful new auto-generated scenery and visual effects, new aircraft and more activities.

Read how Flight Simulator 2002 will excite new virtual pilots and long-time simming enthusiasts.

16 FS2002Aerobatics: Virtual Gs

Arturo Weiss explains how aerobatic flying adds a new dimension to your virtual flying.

Precision, confidence, and situational awareness are just some of the benefits that the pilot gets from this training.

So check it out, you won't be disappointed!

22 Flying Online: Improving The Online Experience

In this issue you learn about the VATSIM organization's first worldwide convention and simultaneous regional mini-conventions.

Also, read about fly ins and a refresher on Departure Procedures (DP) and Standard Terminal Arrival Procedures (STARs).

27 Cargo Run To Salt Lake City

In this Round Robin, we're flying for a cargo-carrying airline based out of Provo Utah. This airline, Alpine Air, exists in real life and was recently featured in *Airways* magazine.

35 Gerring Real: IFR Training Part IV

In this final installment Doug Horton talks about his final practice flights for the instrument rating checkride. This includes learning the required instrument maneuvers, planning and flying the instrument cross-country training flight, experiencing unplanned practice with icing conditions and how he prepared for the required checkride with an FAA-designated flight examiner.

40 Horton's Hints: FS2002 Tricks & Tips

Doug Horton begins a series of helpful hints for Microsoft Flight Simulator 2002. Some hints will be basic and some will be more advanced but all will be informative.

62 Holiday Gift Guide

So, what do you get the flight simulation enthusiast who seems to have everything? Well, there's a lot of cool stuff out there worth mentioning this holiday season. Take a look...

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NOTAMS: New Products

For those of you who aren't familiar with the term, NOTAMS is an acronym for NOTices to AirMen. The U.S. Government issues NOTAMS regularly.

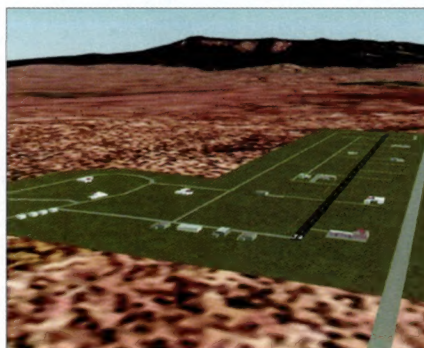
This issue of *Flight Simulator World* includes our version of NOTAMS — an expanded new products section. It's a regular part of our magazine. The products listed are compiled from press releases and information provided by the respective authors and companies who supply the products. We've taken steps to verify the information with each author or company, but cannot be responsible for inaccurate features, specification or availability dates.

Sky Ranch

Aircraft, Panels and Scenery for Microsoft Flight Simulator 2002

This package is a recreation of an airport community in the Southwest United States. Sky Ranch is near the Grand Canyon, Zion, Bryce Canyon and Las Vegas. The package includes:

- ➔ Five New Light Planes all based at Sky Ranch
- ➔ Custom Panels with Virtual Cockpits
- ➔ Sky Ranch Airport Community Scenery
- ➔ ATC adventures



For More Information

Abacus web site: www.abacuspublisher.com

SRP: \$29.95

FS Architect

Scenery Design Program from Douglas Pouk For Microsoft Flight Simulator 2002

Architect 2002 is a scenery design program for creating airports using custom textures and 3D objects. It includes many powerful features for scenery creation, and was designed to be easy to use for beginners and experienced users alike. You can use texture images as a background for laying out taxiways, runways and buildings.



For More Information

Architect 2002 website at <http://www.pouksim.com/>

SRP: \$39.00

FSUIPC Utility Module

For Microsoft Flight Simulator 2002

This long standing freeware Flight Simulator .dll module by Pete Dowson has now been updated to work with FS 2002. FSIUPC.dll is a must-have for flight sim enthusiasts, particularly for those who like to add new scenery and aircraft to the simulator. FSIUPC also adds more flexibility and functionality to the simulator's weather and menu functions.

Peter Dowson

Software by Peter Dowson

Revised Versions for FS98/FS2000/FS2002

FSIUPC 2.77 **NEW**
FSIUPC SDK 7th Release **NEW**

WideFS 4.61
PFC DLL 1.31 **NEW**
GPSout 2.41
EpicInfo 3.91
AdvDisp 1.92
AutoSave 1.41

All work with FS98, FS2000 and FS2002.

Important Note regarding FS2002: This software works ONLY with the FINAL, official, legal, packaged, gold version of FS2002. It will not work with Beta Versions of the sim.

FS2002 Build Number: This software has been tested only on Microsoft Flight Simulator Version 8.00 Build 10919.01 ... there seems to be a second one around, 10918.01, you "will" have problems with that build when using these drivers. The matter is being investigated.



For More Information

You can download the module from Pete's website at:
<http://www.schiratti.com/dowson.html>

FSNavigator 4.5

For Microsoft Flight Simulator 2002

Version 4.5 of FSNavigator is now available. The new version is now FS2002 compatible. A new function for FS 2002 users is the ability to position aircraft in the new parking areas on the airport apron. SIDs/STARs can end/begin with user-defined fix points. Also, Autorouting can now use SIDs/STARs that are not connected to an airway.



For More Information

Website: www.fsnavigator.com/
SRP: EUR35.00 (about \$30.00 US)

Birmingham, England Scenery

From UK2000 Scenery

For Flight Simulator 2000 and 2002

Author Gary Summons has released his latest scenery, for Birmingham, England.

The scenery includes:

- Accurate custom buildings
- Taxiway centrelines
- Jetways
- Timed departure board
- Dynamic Objects!
- Authentic British runway markings
- Perimeter fencing & trees
- Static Aircraft



For More Information

Check the UK 2000 website:
www.uk2000scenery.bizland.com/
SRP \$15.00

SquawkBox 2.3.5

For Microsoft Flight Simulator 2002

This release of the freeware program integrates with FS2002, and places the SquawkBox window within Flight Simulator 2002. SquawkBox is essential for online ATC flying with VATSIM.



For More Information

Find downloading and installation information at the SquawkBox website: www.simclients.com/sb/sbindex.htm

NOTAMS: New Products

FS Scenery Enhancer

From Lago
For Microsoft Flight Simulator 2002

FS Scenery Enhancer adds scenery library objects to existing scenery inside Flight Simulator 2002. Logo promises that the product requires no previous scenery design experience, and in fact the manual will be one single page, and will detail all options for the user. Custom library objects include animals, people, vegetation, static vehicles and aircraft, airport lighting objects, buildings, ships, and more.



For More Information

Find more details on the Lago website at www.lagoonline.com/ENG/prodotti/FSSE/ptd.htm
SRP: Euro25.00 (about \$22.00 US)

75m Mesh Terrain Bundle

From FSGenesis
For Microsoft Flight Simulator 2002

FSGenesis has slashed prices on the US 75m terrain CD and the Alaska-Yukon 75m Terrain CD. You can get either or both bundled in this limited time offer.



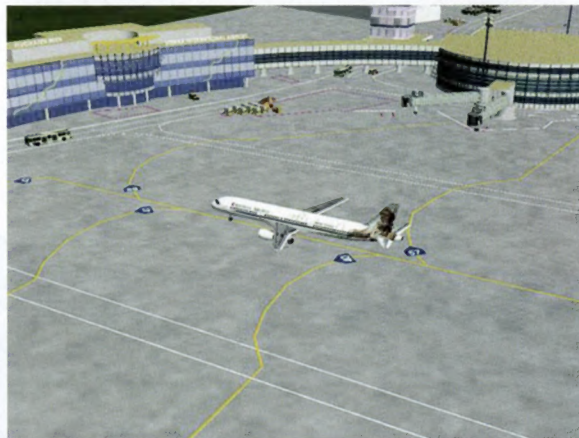
For More Information

Find more details at the FSGenesis website at www.fsgenesis.com/
SRP: \$24.95

Vienna International Airport Scenery

From Project Freeware Scenery
For Microsoft Flight Simulator 2000 and 2002

This freeware project, in the works since in spring, is an accurate representation of this busy airport. The scenery includes accurate buildings, hangars, jetways, and static vehicles/aircraft.



For More Information

Find out more on their website at <http://members.chello.at/steffen.siegl/vvie/>

PmTCAS Glass Cockpit Display

From Project Magenta
For Microsoft Flight Simulator 2002

This freeware program, you will be able to see other AI aircraft flying around you in the world FS2002. This program is **not** a gauge for an FS Panel, but is a stand-alone application. You need FSIUPC.dll installed to use it.



For More Information

You can find more details on the Project Magenta website at www.projectmagenta.com/





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Making Every Mission Possible

Microsoft Flight Simulator 2002

There's a lot to look at in this new version, and a lot to like as well! Microsoft established a two-year cycle for updating the Flight Simulator series, and set up a dedicated Flight Simulator product development team long ago. The new 2002 version is a major update.

The most significant additions are built-in ATC, new 3D virtual cockpits with working instruments, enhanced terrain and textures, and auto-generated scenery elements. There are also many new visual features such as water effects and jet contrails.

Since most users are very familiar with previous versions, I'll focus on its new features. And before you ask, yes, the frame rates are significantly better than in FS 2000. With display settings maximized, it's still possible to slow the visual performance of a fast system. However, after concentrated efforts by Microsoft, the previous stuttering problem seems to be gone.

I'll describe most of the new features in FS2002, though there are so many that I may miss a few. But you'll be delighted to discover them on your own, as this is a fun program to just spend some time exploring. Also, my objective while describing new features is to provide both praise and critique, as appropriate. In this case, the level of praiseworthy features and achievements nearly overwhelms the not so praiseworthy. Therefore, it's a pleasure to tell you what I've learned and experienced about this great new update.

Aircraft

Following the marketing precedent of the 2000 version, there are again "standard" and "professional" versions of the program. New aircraft for the standard



version include a Cessna Caravan amphibian, Boeing 747-400, and Cessna 172 Skyhawk SP. The extra \$20 or so cost of the professional version provides four additional aircraft, including the Cessna 202 Caravan (without floats), Raytheon/Beech King Air 350, Mooney Bravo, and Raytheon BE58 Baron. The Concorde - most likely due to lack of interest - that was added in the last version is gone.

The professional version also gets you the gMax 3D design tools from Discrete, who also make 3D Studio Max. This program is a subject all to itself, and will be reviewed in the next issue.

Virtual pilots will see a new classification scheme in the aircraft selection menu, which allows sorting by manufacturer, model, and livery. Many of the default aircraft are provided with multiple liveries. Users can edit the aircraft.cfg files of add-on aircraft directly or with FSEdit in the Professional version, to include the classification scheme; otherwise, add-on aircraft will appear in the "Unspecified" category.



Flying over the Grand Canyon in Microsoft Flight Simulator 2002

One surprise in aircraft is the ability of landing gear to flex and bounce. You can see this if you change to an exterior view, then taxi off runways or taxiways. Also, there's new "eye candy" in this view, as you'll see that the wheels are round and appear to roll. The tires can kick up dust and dirt if you go off the runway.

Speaking of "eye candy," if you have a video card that will support T&L (Transformation & Lighting) you will see that aircraft and building surfaces can reflect varying lighting effects. An example of this is the shiny wings on the Boeing 737 in Landmark livery. Also (hold your breath), we have landing lights visible from inside the aircraft again, as well as from outside. The ground effect and placement is very realistic; for example, the landing light is appropriately midway out on the left wing of the included Cessna 172.

I think users will find the new Caravan float plane the most fun to fly, as after landing, it will splash into the water, produce a wake, "rock with the waves" on the water. With the **[Shift] + [W]** keyboard toggle (not shown in the manual's keyboard guide) its animated water rudder will lower, move left and right with

Microsoft FS2002 includes real-time, interactive ATC, beautiful new auto-generated scenery and visual effects, new aircraft and more activities.

Read how Flight Simulator 2002 will excite new virtual pilots and long-time simming enthusiasts.

rudder controls, and will visibly control the aircraft's heading on the water. Most fun is actually taxiing the Caravan into and out of the water!

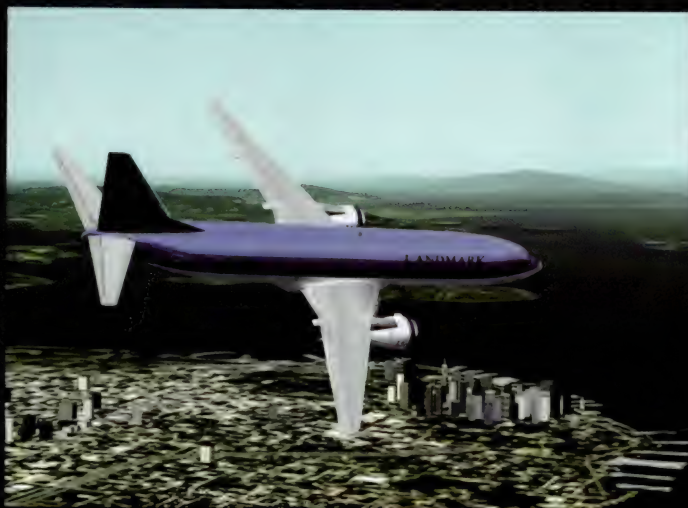
By the way, there are a few other new button assignment options available for developers, and one that I'm hoping will be used quickly by aircraft authors is a built-in command for toggling carrier aircraft tailhooks up and down (inherited from Combat Flight Simulator 2).

Panels

As in previous versions, some users will be disappointed with the quality of the normal (2D) panels in the default aircraft, compared to the multitude of add-on aircraft panels available on the Internet. However, the new 3D virtual cockpits are a great addition. Similar to FS 98, the first press of the **S** key shifts to the virtual cockpit. The good news is that unlike the earlier version, the new 3D virtual cockpits have fully operational instruments and animated controls.

Most surprisingly, you can use your hat switch or keyboard to pan the inside and outside views smoothly and simultaneously and both horizontally and vertically. This feature is particularly helpful when doing pattern work and landing, as it fully simulates moving your head inside the cockpit.

The virtual cockpits will also show lighting effects, so as you turn the aircraft, the position of the sun will affect the lighting of the aircraft interior. There is also a slightly visible prop circle for prop aircraft, which is affected by throttle and prop controls. On the negative side, there is no way to pan the outside scenery up and down without also moving the panel, so you can't simulate raising and lowering.



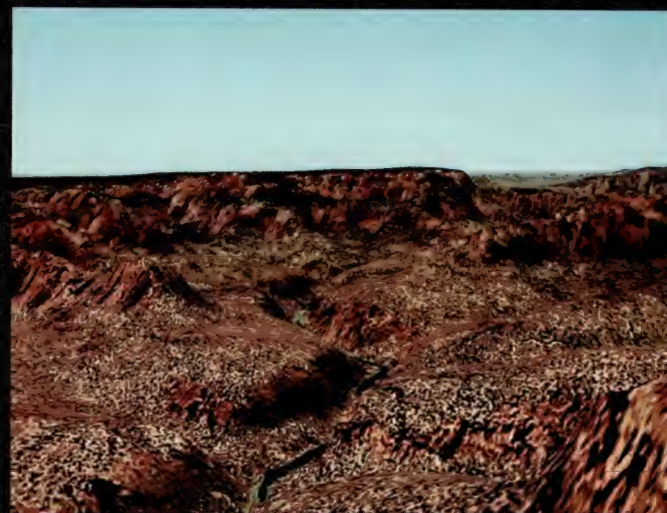
FS2002 Landmark 737 over San Francisco, with shiny wings that reflect lighting variations onto the fuselage.



Landing in the Cessna 172 with runway nicely visible in the virtual cockpit view. The transparent, movable ATC window is shown in the upper left.



New fully-featured Baron 2D panel.



The new terrain and texture system provides a stunning view of the Grand Canyon and the Colorado River.



Baron virtual cockpit, with "eyepoint" zoomed out, showing panel with working instruments and animated yoke.



This top view shows the amazing detail of the satellite photo used as the texture underlying O'Hare Airport.

Most surprisingly, you can use your hat switch or keyboard to pan the inside and outside views smoothly and simultaneously and both horizontally and vertically.

Flight simmers will see from the Baron images that the virtual cockpits are less filled with gauges and other panel features than the associated 2D panels. However, you can easily edit and enhance the virtual cockpits in the respective Panel.cfg file. Curiously, virtual cockpits are not provided for some of the default aircraft, such as the Cessna 182RG, Learjet 45, Mooney Bravo, Sopwith Camel, or Sweitzer 2-32 sailplane. A seemingly unfinished part of the update process.

There is another new panel feature to discover in the 2D view, although it's not particularly "real-world." If you cycle the W key, which has toggled the "wide view" in recent versions, its first press will display a row of primary instruments. This feature can be customized for each principal aircraft category in FS 2002, but that's an advanced topic.

ATC

Perhaps the longest-awaited feature in the MS Flight Simulator series is some form of built-in, interactive air traffic control. Although a few of the die-hard enthusiasts of previous ATC add-on programs that use the old Adventure format will swear up and down that these programs provide more realistic ATC, most flight simmers will probably not agree, and will find the new ATC feature surprisingly realistic and very easy to use. Also, considering that the built-in ATC is interactive with the new AI aircraft, I doubt that the old ATC programs will continue to have much of a following.

One strong contributor to FS2002's ATC realism is that many of the Microsoft development team members are real instrument-rated pilots. We hear their voices as the ten included pilot and controller voices. By the way, there's some randomness built in,

so you will hear different ATC phasing or directions if you repeat a flight.

The primary means of using the ATC feature, at least for IFR flights, is to use the Flight Planner to select the departure, route, and destination. Once this done, all you need to do is press the  key – the key to the left of the "1" key on U.S. keyboards. That will bring up the transparent ATC dialog box with a series of sequential menus.

Radios can be auto-tuned and you will hear any of up to 10 voices, which will provide completely realistic ATC directions. You can select the pilot voice, but unlike a precedent in other products like the ProFlight series ATC add-on, the selection box doesn't provide samples of the voices, so finding a favorite voice can be quite tedious.

The ATC is also realistic for "takeoff and go" VFR flights without a flight plan. Activating the ATC dialog will bring up a menu that offers landing at a nearby airport or calling the nearest ATC facility. If you select landing, the menu will change to show the nearest airports, and the list will automatically update as you continue to fly.

For example, I took off from Meigs without ATC, then after flying toward Midway (KMDW), I pressed the  key and contacted ATC. With just a few key presses I was given pattern entry instructions and subsequently cleared to land on Midway runway 31C. The accompanying screenshot shows landing with the ATC window moved to the upper left-hand corner, and the runway is highly visible over the top of the Cessna 172 virtual cockpit, which is easily moved with a hat switch and keystrokes.

Artificial Intelligence Aircraft

This new feature provides visible Artificial Intelligence (AI) aircraft around and between airports. This feature uses default aircraft models from your aircraft folder as the AI aircraft, instead of the generic "lifeless" models of the previous "dynamic scenery" aircraft. And if you have ATC activated, you'll hear ATC communications with nearby AI aircraft. You can also turn on AI identification, which will place a callsign tag near each AI aircraft. You will notice that you, ATC, and the AI aircraft are particularly interactive during taxi to the runway.

Perhaps the longest-awaited feature in the MS Flight Simulator series is some form of built-in, interactive ATC (air traffic control).

If you have ATC activated, you'll hear ATC communications with nearby AI aircraft. You will notice that you, ATC and the AI aircraft are particularly interactive during taxi to the runway.

My impression is that this feature in terms of the visual effects is less than the FSTraffic add-on product, but in terms of the ATC interaction, it's much more. The SDK will include instructions on how to include add-on aircraft as part of the AI population. I should also stress the Intelligence part of AI, because these aircraft are smart and will wait for you if you're in position for take-off, for example. On the other hand, you may need to wait for them when landing!

Scenery

One of the most pleasant and long-awaited changes is an enhancement of the FS 2000 digital terrain modeling system, coupled with new textures. Very much modeled after the Combat Flight Simulator 2 terrain, but even smoother in overall performance, and exponentially more friendly to your system than FS 2000.

This is most impressive in areas with complex terrain, such as the Grand Canyon (takeoff and head north from KGCN airport) and Alaska's Denali (use the Map View to go to 63N, 147W, heading north at 7000 feet). This new scenery engine seems to contribute to the terrific smoothness and fluidity of the sim, without the noticeable stutters and lower framerates that interfered with FS2000 operation.

The texturing system is related to land classifications, so that appropriate textures are selected in mountainous areas. There is one annoyance relating to rivers and roads not always orienting correctly with terrain. I believe that problems like this can only be fixed with manual modifications of scenery artwork, so we must accept a bit of this in trade for the significantly better appearance of the new scenery.

Previous versions of the simulator showed roads and rivers that seemed to be drawn with a pencil on

your screen, right out to the horizon. These features are now rendered into the terrain, and the mip-mapping effect tends to blur them prematurely. So, before there was unrealistic long visibility of roads and rivers but now it's pretty much the opposite.

A significant improvement in realism and perspective around large cities is how FS2002 provides satellite photography as the underlying texture in many locations, including downtown Chicago near Meigs Field, for example. In this case, you can see lakefront details such as Buckingham Fountain, though it's not a 3D object. It's convincing and much more realistic, and this same technique of using satellite photo backgrounds has been applied to several "high detail" airports.

At most other airports there is improved blending with surrounding terrain, replacing the former "generic green" airport texture that seemed to appear everywhere, regardless of season. In general the airports are detailed better than they were in FS 2000, but 3rd party scenery designers could still enhance the airstrips quite a bit.

Of course, it would be just about impossible to produce worldwide scenery this extensive without some bugs. Some airports have terrain showing through ground polygons, most likely due to flattening problems. In addition, you will undoubtedly see misplaced rivers here and there. But these details are generally much more consistent than previous version of the simulator. For example, rivers and lakes display much more natural contours and shorelines. Coastlines worldwide are also much better implemented, and actually look quite convincing.

One annoying, but probably necessary thing happens with the new terrain and scenery system. It seems to reload more frequently than you'd like. The worst case is if you use a panel-mounted clock to change the time of day. In this case, I've experienced it reloading every time I changed the time by one hour, even if I was trying to change the time by a few hours. It will be best to change time by means of the menu system, in which case it will only reload once per change of time and/or season.

The AutoGen feature provides an extra layer of scenery to show buildings and trees on top of

One of the most pleasant and long-awaited changes is an enhancement of the FS 2000 digital terrain modeling system, coupled with new textures.



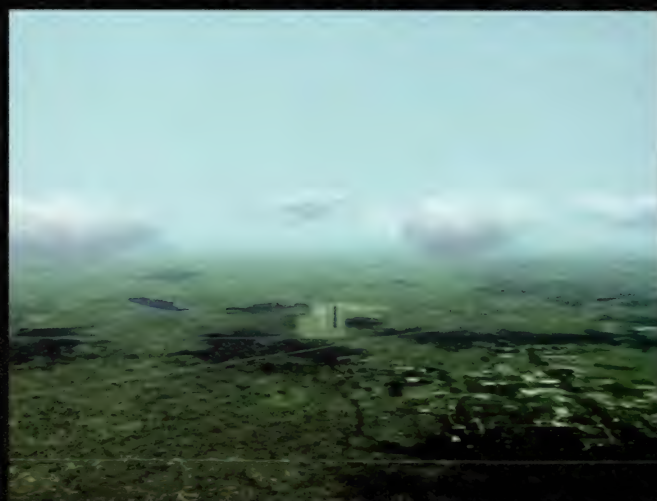
Screenshot of AutoGen scenery set to Dense, with framerate over 30 fps, on Athlon 1400 system.



The Caravan Amphibian landing near the Golden Gate Bridge shows water effects as well as the richness of new 3D objects, terrain, and scenery textures.



FS 2002 includes onscreen manuals that can be opened directly as Adobe Acrobat files or through the simulator Help function.



At most other airports there is improved blending with surrounding terrain, replacing the former "generic green" airport texture that seemed to appear everywhere, regardless of season.

appropriate textures, classifying the textures so that the mix of buildings and trees is related to city, suburban, farmland, and other areas. Also, the objects naturally reduce in size as their distance from you increases. This provides perspective outside every airport you go to, and represents a significant advancement in scenery realism and quality.

The AutoGen density slider-adjustable in six increments, and the effect on framerate seems tolerable on moderate settings. For some users, the AutoGen scenery may not look quite as realistic as the great new surface textures and satellite photos by themselves, as the objects may seem exaggerated in size, but they are acceptably varied and random.

There are a few minor scenery database issues, such as closed airports being present. A "pet peeve" example in the Chicago area is Glenview Naval Air Station (NBU) being shown in the airport selection list and displayed in the scenery, complete with runways and lighting, though it was closed six years ago. The runways have been removed and it is being converted to parks, homes and office buildings. Glenview is just over seven miles northeast of O'Hare, so don't become disoriented. On the other hand, at the closed Alameda Naval Air Station, north of Oakland, California, you'll still see the overall tarmac pattern in FS 2002, though the runways are gone, and it no longer appears in the airport selection list.

Eye Candy and Other Surprises

You'll discover and admire several new visual effects:

- ➔ Contrails are produced automatically by jet aircraft at high altitudes, and the contrails look very natural in size, "wispieness," and decay. There's black engine exhaust smoke on startup, landings will produce wheel smoke, and if the tail strikes the runway, you'll see sparks.
- ➔ There are several new water effects, including a shimmering wave effect you can see if you're in the Caravan floatplane, and there are breaking waves near beaches. As mentioned above, there's also a rocking effect of aircraft on the water, including seeing floats move up and down in the water. All these effects are very impressive!
- ➔ Though not enabled by default, there is a hidden surprise in this version - stunning damage models for all default aircraft. You have to see these effects to appreciate them. Look at Horton's Hints elsewhere in this issue to learn how to enable the damage models.

- ➔ Clouds, although not perfect, seem to be improved and more realistic, and it appears they aren't a significant framerate issue, at least with less than four cloud layers active.
- ➔ There's a new pushback feature, which is started and stopped by pressing **[Shift] + [P]**. It's steerable with the "1" and "2" keys on the main keyboard (not keypad), but there is a slight delay after each key press.
- ➔ A progressive taxi feature is built into the scenery at the airports. After being given the taxiway sequence, you'll see an ATC menu choice for progressive taxi. Ground will acknowledge your request, and you'll see a purple line appear in front your aircraft. Following the line will take you to the ramp via the designated taxiway. That reminds me, there is still no taxiway and runway signs in the default scenery, so there's plenty of work for add-on developers to contribute to all airports.

User Interfaces and Controls

There are several user interface changes, which I believe were motivated by simplification for new users. However, experienced users may view these changes as a lack of flexibility. The first is a default startup screen and menu that appears instead of the program going directly to the familiar startup at Meigs Field. This interface provides for selection of the flight planner, lessons, creating a new flight, or starting a saved flight. For experienced users, this menu can be disabled in the Settings menu and then retrieved at any time by pressing the **[Esc]** key, then End Flight button.

Some of the other changes don't seem justified, such as removing the autopilot and radio selections from the aircraft menu list. In these cases, users can only interact with these features through the associated instruments. But others, like the new Go To Airports menu selections are a great addition. You can now select various ramp positions from this menu, instead of just lined up on one of the runways. You are also able to select gate positions at some airports, or they can select "active runway," which is now determined by the present wind direction.

There are many more default settings provided for various joysticks, yokes, and pedals hardware. Users of CH Products Pro Pedals USB, for example, will find that differential braking is now fully supported. I recommend checking your axes and buttons assignments and re-programming as necessary, in case

you experience problems with default settings, but most work "out of the box."

Weather settings are nearly identical to those in FS 2000, except that winds aloft are now supported as an option when using the built-in real-weather downloading feature. One very helpful new feature is a form of tool tips, which provides for brief explanations of all settings options in various dialog boxes. It is also possible for third party gauge programmers to provide custom tool tips for their gauges.

Lessons

Having benefited from Rod Muchado's lessons in FS 2000 last year in conjunction with training for my real Private Pilot certificate and instrument rating, I'm disappointed that the simulator lessons and associated written material is no longer as integrated. For example, in FS 2000, there were a combination of printed manual readings, tutorial flight sessions, and adventure-based lessons.

In FS2000, the student selected tutorial lessons and associated flights and was guided through them by the printed manual. In the new version, the 38 integrated tutorials have disappeared, and in the case of the Instrument training section, for example, the user is advised only to "Please read Ground School Classes 13 through 16" before starting the three associated adventure-based training lessons.

Overall, I think the lesson format and content is a significant step backwards. During my real pilot and instrument training, the tutorials were a significant part of my using FS 2000 as an integrated "book and yoke" training aid, and I hope they can be brought back in the next version.

Manuals

Following an industry trend, Microsoft is migrating toward onscreen manuals, and some users may miss the bound manual of the past version. The 2002 version provides several Adobe Acrobat files that can be accessed directly using Explorer or through the help function within the simulator. The largest section is Rod Muchado's Ground School, which provides 188 pages of information related to pilot training. Additionally, there are manual sections titled:

- Before You Fly
- Aircraft Handbook
- Floatplane Handbook
- ATC Handbook
- Quick Reference Guide
- Real-World Training Handbook
- Getting More From Flight Simulator 2002

Conclusion

As I said at the beginning, "there's a lot to like," and I know I haven't covered everything, such as the FSEdit and Flight Instructor features in the Professional version. I'm sure there's also more "eye candy" to discover, and that will be a joy for users to discover on their own.

Certainly, FS2002 includes a few imperfect, unfinished or not yet conceived features that will lead to improvements in future versions. Nevertheless, I believe this to be the most significant upgrade of MS Flight Simulator yet. It's a huge accomplishment; the team at Microsoft deserves our collective great thanks for this achievement.

FOR MORE INFORMATION

Visit the Microsoft website for more information on FS 2002:

<http://www.microsoft.com/games/fs2002/>



Like many of you, I enjoy going to airshows every chance I get. Who wouldn't marvel at all the maneuvers the various airshow performers perform for our viewing pleasure? I know I do. There are few things quite as thrilling to me as watching a pilot fly a beautiful, precise aerial routine. Pilots like Sean D. Tucker, Patty Wagstaff, and many others just make me look up in the sky in awe.

While, I've had some real-world aerobatic training, I could only hope to reach the levels of flying these great pilots possess. Aerobatics is fun, but as I have experienced first-hand, also tough in many ways. The maneuvers flown by these aviators place a lot of force on the body, and in ways few of us have ever experienced. "G forces" are real and conversely affect the pilot's performance.

G-forces are the load factors stressed on the body and airplane. Each "G" represents one level of the earth's force of gravity. For example, for a 150-pound pilot a 2G maneuver would leave him placing 300-pound force on the airplane. Every part of his/her body would weigh two times the original weight. So, you bigheaded pilots would really swell up doing some of these aerobatic routines!

Although possible to master, these maneuvers are not easy to perform and the only way to really appreciate this type of flying is to actually experience it. So, why don't you get up in the air and try it? Sure, you may lose your lunch or even your consciousness, but oh what fun it would be!

Seriously, aerobatic flying adds a whole new dimension to your virtual flying. With a few hours of aerobatics under your belt, you will be sure to appreciate noticeable improvement in your flying. Precision, confidence, and situational awareness are just some of the benefits that the pilot gets from this training. Check it out today, you won't be disappointed!

As you can see, I am a fan of aerobatics and for good reason. I realize, however, that not everyone will have the opportunity to try this in real-life. So, what the next best thing? Why, simulated aerobatics of course!

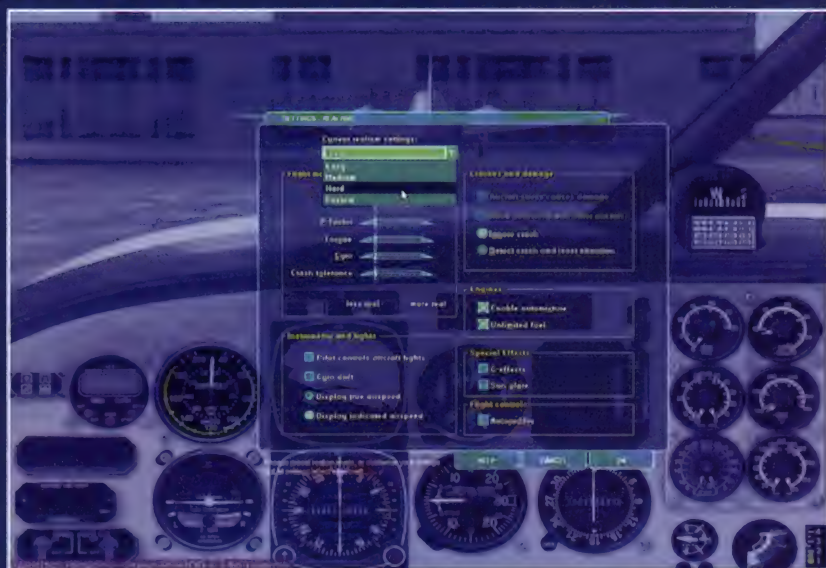
This segment of flight simulation is exciting and very fun. Some flight simmers are content with flying their Cessna around the patch or even shooting an ILS approach down to minimums in their Boeing 737. That's okay, as each of these flights promotes a unique excitement. Don't get me wrong either, because I love to fly every thing under the sun, from the Sopwith to sailplanes and everything in between.

It's just that I get a special rush when I fly virtual aerobatics. Maybe it's the excitement of flying those same maneuvers flown by airshow performers and aerobatic competitors before cheering crowds. Perhaps it's the concentration needed to fly a well-executed aerobatic routine. Whatever the reason, it's just loads of fun for me! I tend to fly on The Zone a lot, and when I do, my cyber flying buddies always joke that I like to fly any way but straight and level. But that's okay...I've could be called much worse!

FS Aerobatics: Virtual Gs

FS Aerobatics Is The Next Best Thing

By Arturo Weiss



In your FS realism menu, make sure that all Flight Model sliders are set all the way to the right (most realistic), and that autorudder is turned off.

that have been performed during their required flight-testing phase. This phase is restricted to a certain area, where the flight tests are conducted away from congested population centers. Anyways, all that is needed is to perform and flight test each maneuver and that's it. By the way, guess who the test pilot is...that's right, usually the owner of the aircraft!

Let me make it clear that I'm not telling anyone to fly real-world aerobatics in any plane, (much less a non-aerobatic aircraft) without proper training. What I do suggest is that you try experimenting with some maneuvers on your favorite flight simulator program. Other than your ego, no one will ever get hurt here. Better yet, if you do crash, the only one around to criticize you will be...you!

So What Is Aerobatics?

So, what exactly is aerobatics all about? The Federal Aviation Administration (FAA) officially classifies aerobatic flight as "Any intentional maneuver involving an abrupt change in an aircraft's attitude, an abnormal attitude, or abnormal acceleration, not necessary for normal flight."

The agency goes on to say that without a parachute, no one may carry a passenger and fly any maneuvers that exceed 60 degrees of bank relative to the horizon, and/or 30 degrees of attitude nose-up or nose-down with respect to the horizon (pitch). These regulations govern real-world aerobatics, and flight simmers need not worry about this, unless only want to fly under realistic conditions. However, sitting at your computer wearing a parachute is somewhat undignified.

The Planes

The best thing about aerobatics (virtual or real world) is that many aircraft can be used. This is especially true in the virtual environment. Many enthusiasts constrain themselves to the default Extra 300 that comes with Microsoft's Flight Simulator. While this is a good start, it should not be considered the extent for your aerobatic flying.

Contrary to popular belief, most airplanes can perform some types of aerobatic maneuvers. Whether they are certified for this or not is an entirely different issue. Certification, or lack thereof, is really based on the manufacturers' intent for the aircraft. If it's meant to be a cross-country machine, then it just isn't worthwhile going through all the additional testing needed for this special certification.

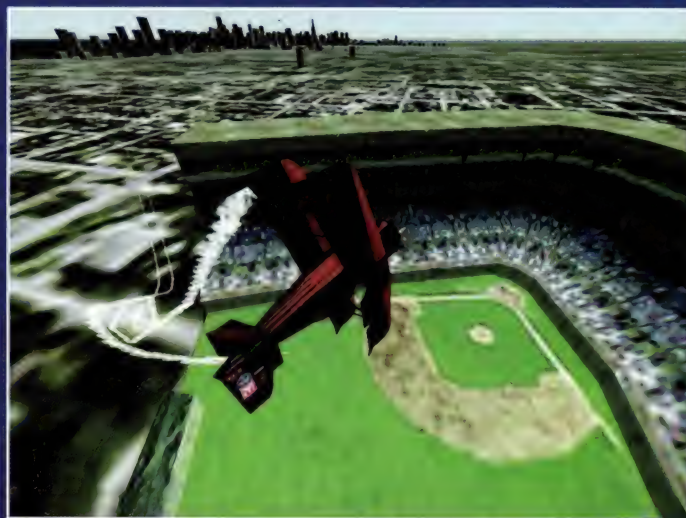
Most certified trainer aircraft can perform limited aerobatics and have placards (signage in the cockpit) and notes in the aircraft manual that stipulate which maneuvers are and are not allowed. These may include spins, stalls, Chandelles, Lazy Eights etc. I'll expand on each of these maneuvers, along with a few others, later in this article.

In the case of experimental aircraft, certification is much different than your Cessnas, Pipers, and Mooneys, etc. Experimental aircraft are allowed to fly any aerobatic maneuvers

Anyway, going back to the airplanes, there are many cyber aircraft available for aerobatic flight. As I mentioned before, almost all virtual aircraft are capable of performing at least limited aerobatics. I'm sure some of you have already tried looping the Boeing 737. Come on admit it! How about rolling the 747? Yeah, I hear you laughing! I've done these and many other things with these aircraft, but I'll plead the Fifth Amendment if asked!

In a more conventional sense, the Extra is a better aerobatics platform than the Cessna 182. The good thing about flight simming is that there are numerous add-on aerobatic aircraft available for download off the Internet. This includes virtually (pun intended) all the aerobatic aircraft seen on the real-world competition and airshow circuits. Sukhoi's, Pitts, Extra's, and Stearman's are just a few examples of the available aircraft out there.

Each of these aircraft has its own set of advantages over other models. For example, the Sukhoi series of aircraft have a lot of power and with a gear-engine and large propeller, are perfect aircraft for vertical-hovering maneuvers. Oh, how I love to do a torque roll with my add-on SU-29! The Giles 202 exceeds most other aircraft for its extremely high-roll rate. Finally, the Pitts are known for their beautiful hammerhead stall characteristics.



This is just a sampling of what's out there. Let us not forget that prop-driven aircraft are not the only aerobatic platforms out there. Many cyber jets make excellent aerobatic aircraft. There are many military jets available at the various FS sites, in addition to those retail products. The F-86 Sabre is one of my favorites, as it offers excellent roll characteristics, power, and maneuverability, all while screaming along a relatively high-speeds.

Of course, the modern military fighters, like the F-15, offer supersonic speeds and maneuverability. The drawback with these types of aircraft is that they can't perform some of the maneuvers like their propeller-driven counterparts. Then again, they aren't designed for that, and that's what sets them apart. The point here is for you to decide which type of aerobatic flying is more to your liking. Do you enjoy aggressive tumbling aerobatics in a Pitts S2C, or more of the graceful, yet extremely fast flying experienced with the various military jets? It's up to you.

The Designers

With the variety of virtual aerobatic available today, there are almost as many designers as there are airplanes. There are a few truly capable designers out there and their work sets them apart from the rest. I'm lucky enough to know a couple of these guys, and would like to take a moment to introduce them and, the principles behind designing, to you.

Mikko Maliniemi is a 23-year-old student from Finland. He is currently studying Information Technology at North Carelia Polytechnics in Joensuu, with the hopes of becoming an engineer. Mikko tells me that he has always had an interest in aviation, especially since his father has already has a pilot's license.

His first experience in an airplane was at the tender age of two, so he considers himself to have been involved with aviation nearly his entire lifetime. While, he would love to get his pilot's license, several factors have precluded him from doing so. Mikko has therefore taken flight to the next best level, flight simulators. Lucky for him (and the rest of us) Microsoft and other companies manufacture a host of quality products. Mikko has always been partial to the Microsoft line and has "tinkered" with them since the days of Flight Simulator 3.

Mikko's designing career began a few years ago when he noticed the lack of Finnish planes on the freeware market. In the spring of 1998, he started by repainted previously designed planes, but then got the itch to try his hand at his own design. He purchased AF5 and started brainstorming. His first project was a simple aerobatic plane, an Aviatika-900 Akrobat, a Russian prototype.

Since these early days, Mikko has designed several airplanes (over a 100 to be more specific). If you interested in seeing them, check them out at <http://www.flightsimnetwork.com/malniemi>. His favorite design, however, is Jim LeRoy's Pitts S-2S Bulldog. This yellow and black highly modified Pitts is a sight to see in the ground and the air! I've seen LeRoy fly and he is a true maniac, but wow what a show!

Aerobatics provides Mikko a challenge to fly precise and aggressive, but he admits that he hasn't flown much online. Therefore, he also admits other great aerobatic pilots also excel in formation flying.

One particular cyber pilot, and friend of Mikko, is Jason Terry. Jason is a 21-year-old Private Pilot from East Texas. He has been obsessed with flying since birth and finds aerobatics to be one of

the most important parts of aviation, since the earliest days of flying. Jason hopes to become a competition aerobatic pilot some day, but money seems to be holding him back, like most of us with this unique obsession.

His flight simming experience started with his first exposure to MS Flight Simulator 4 back in 1994. Since then, Jason has owned just about every version of Flight Simulator. He got started in designing by making a few custom aircraft in BAO's Flightshop in 1995 for FS5.0. Shortly afterwards, Jason got into scenery designing with Apollo's Scenery Designer and found scenery to be much easier than aircraft design.

In 1998, he was introduced to the Internet, and more importantly, the "flightsimmming community." This gave him the perfect opportunity to learn the HTML that makes up web sites, and then quickly began work on his own website called "Aeroworks". Be sure to check it out at <http://flightsimmers.net/red-ace/>, which was all about FS98 and real world aerobatics. While Jason will continue to design planes, he'll spend more time on panels and scenery, as they are much less time consuming.

Well, now you know a little bit about the people behind some of the FS aerobatic planes out there. Now, let's move on to the maneuvers and how to fly them...

Preparing To Fly

Before we can fly the maneuvers, we need to properly prepare our computer and ourselves for the best flying conditions. The better conditions will allow you to fly as precisely (and realistically) as possible.

Hardware

The most important thing to have if you "really" enjoy virtual aerobatics is a joystick. Believe me, flying with a mouse or keyboard is not fun. Yokes are not optimum either because they are just too cumbersome for aerobatic flight. Whatever joystick you buy should be "okay", but the best option is a joystick with 4-axes, one for each control surface: ailerons, elevator, rudder, and throttle. It is imperative that you have *all four* of these controls if you want to get the most out of aerobatics in FS.

Pretty much any joystick you get will have the three controls of pitch, bank, and power. But the fourth, and most neglected by joystick manufacturers, is the *yaw*, axis. I cannot stress it enough that you must have control over yaw, either by rudder pedals or a 4-axis joystick. I have tried rudder pedals and flight yokes in the past, and for me they are more of a hindrance than a gift. A 4-axis joystick is hands down the best way to go, in my opinion at least. Some of the best ones are the Microsoft's Sidewinder 3D Precision Pro and the Wingman Extreme.

Location

Away from Meigs field!!! Location is a very important thing and often overlooked. If you are new to simming, you probably start out there all the time and have fallen in love with that place. Microsoft designed Meigs field as a startup location for a reason: *eye candy*. That is, Chicago has "a lot" of things to see and do, and while I agree completely that it is interesting to fly in Chicago, all that scenery slows down your computer drastically.

Even if you have a powerful processor, you will get even better frame rates elsewhere, and "elsewhere" does *not* mean L.A., New York, or any other huge city. Chicago is definitely the worst about frame rates, but any dense scenery area will cause you to have less frame rates, no matter what processor you have. Both FS 2000 and FS 2002 are loaded with airports, so finding a suitable one, like in the middle of Nebraska, will not be a problem...I promise!

Aircraft

Although you can do aerobatics in some jet aircraft, this section of the article is designed with piston-powered aerobatic aircraft in mind, and the turboprop engines operate entirely different from piston engines. For more on jet engines, read my article in the last issue of *Flight Simulator World*. Slipstream, p-factor, and torque play a *very* important role in aerobatics, both real world and simulated, and jet aircraft have none of the above.

Setup

With flight simulator running, go to the Aircraft menu and select Realism Settings. Under Flight Model make sure *all* of the sliders are set *all the way to the right*. Also, make sure that Autorudder is left unchecked. Otherwise the yaw axis explained above will be rendered useless! Those changes are required to get the most out of aerobatics. Everything else is up to you.

I leave Crash mode off because I test a lot of new aircraft, and strange things can happen at any time. In aerobatics, crash mode means that if you screw up and drill a hole, the flight will restart. That takes up valuable time. When you just ignore the crash, whenever you impact the ground your plane will automatically be placed at 1000 ft. AGL instantly. Also, you can press SHIFT+Z at any time to toggle the information of your flight on the main window, similar to the format in slew mode. This is most useful!

Views

Be sure you have the smoke on when you try maneuvers, because it gives the best reference of your performance and flight path. Without it, a flat spin is boring when viewed from the outside. It is better to fly aerobatics from an outside view such as the tower mode. Tower is one of the best modes for freestyle maneuvers because it is fixed on the ground (or in the air if you choose) and *does not* move along with the plane like spot mode. The cockpit



mode is a good mode as well, especially for accuracy of competition style maneuvers that require crispness in banks and rolls.

If you want to use an external view mode, press **SHIFT+Z** three times to display speed, g-load, and altitude. These three settings are all you really need for freestyle flying, but for competition style flying, it is best to be in the cockpit and flying in an *aerobatic box*.

Aerobatic box

The aerobatic *box* is a field where all real world competitions are flown as well as a great place to practice in flight sim. It is an imaginary cube of airspace that is 3300 feet (1000 m) wide and 3300 feet long, with the top being at 3500 feet AGL. White ground markers mark the length and width of the box, and the judges monitor the competitor's compliance with the limits. The floor of the box is at separate altitudes for respective categories:

Basic/Sportsman	1500ft
Intermediate	1200ft
Advanced	800ft
Unlimited	328ft

The Basic Maneuvers

So we're all ready to go fly now. Because of the large number of maneuvers out there, I'll boil my coverage down to three basic maneuvers at first. All the others are basically a combination of these four in some form or another. With that said, lets begin!

Aileron rolls

Aileron rolls are flown with the rudder and elevator in the neutral position during the roll. The aileron is fully deflected in the direction of the roll. This is the easiest of the rolls to fly. Pulling the nose up to 20 - 30 degrees above the horizon starts the aileron roll. The elevator is then neutralized and the aileron fully deflected in the direction of the roll. The controls are maintained in that position till the roll is completed. After the roll is completed the nose is usually 20 - 30 degrees below the horizon.



Loop

This is one of the most basic maneuvers, but not easy to fly well. It has to be perfectly round. Entry and exit have to be at the same altitude. The difficulty in flying this maneuver well is in correcting for effects of wind drift. The maneuver starts with a pull-up of about 3 - 4 G.

Once past the vertical, the backpressure on the elevator is slowly relaxed to float over to top of the loop to keep it round. Past the top, the backpressure is slowly increased again throughout the back part till horizontal flight. The plane has to stay in one plane with the wings orthogonal to the flight path. Rudder is used to maintain the plane of the figure and ailerons are used to maintain the orientation of the wings.

Spin

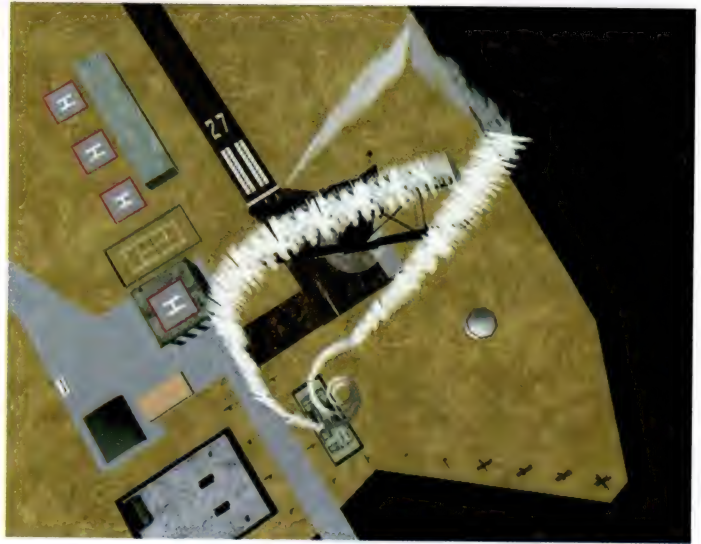
These come in 3/4, 1, 1 1/4 and 1 1/2 turns. During spin entry, the plane has to show a stall break, followed by the auto-rotation. The rotation has to stop exactly after the specified number of turns. Once the rotation has stopped, a vertical downline has to be established.

In a crossover spin, the plane is first stalled upright. At the stall break, the nose is pushed forward to get into an inverted spin while maintaining the stall. The inverted spin is then completed, as it would be for an inverted spin with entry from inverted flight.

Take a moment to practice these maneuvers and see how successful you are. Don't worry if you crash the first few (dozen) times. Seriously, if you want to fly as good as the airshow stars you must do one thing...practice, practice, practice! If you feel up to it, try one of the more advanced maneuvers.

Immelman

The figure starts with a half loop to inverted flight. A half roll then results in horizontal upright flight. This is one of the maneuvers that have been used in WW I to reverse direction. This maneuver does not preserve speed and altitude. It trades speed for altitude.



Hammerhead

It starts with a quarter loop into a vertical climb. When the plane stops climbing, it pivots around its vertical axis (which is now horizontal). The nose moves in a vertical circle from pointing up through the horizon to pointing down. After moving vertically down to pick up speed again, the maneuver is finished with the last quarter of a loop to horizontal flight. This figure can have optionally rolls on both the up-line and the down-line.

The quarter loop is flown just like the first part of a loop. When the plane is vertical, the elevator backpressure is released completely. During the vertical line up, some right aileron and right rudder is needed to maintain the vertical attitude because of the engine torque and p-factor. When the plane has slowed enough, full rudder initiates the turnaround.

It is followed by right-forward stick (right aileron and forward elevator) to keep the plane from torqueing off. The pivot is stopped with opposite rudder when the nose points straight down. When the pivot is completed, the ailerons and rudder are neutralized. Elevator and rudder are used to keep the nose pointing straight down. The pivot must be completed within one wingspan. Rolls on the downline require only aileron input if the plane is trimmed correctly.



This maneuver is sometimes called a hammerhead stall. This is not an accurate name because the airplane never stalls. The airspeed may be very low, close to zero, but since there is no wing loading during the turn-around, there is no stall (at zero g wing loading, a wing does not stall). The plane is flying throughout the maneuver with all the control surfaces effective, although sometimes only marginally so.

This also is one of the maneuvers that have been used to reverse direction while adjusting altitude and airspeed by changing the length of the down-line.

Wrap-Up

So, there you have it. It would be foolish and impossible to discover the topic of aerobatics (virtual and real-world) in one article. With this in mind, I hope that you have walked away with a better understanding of this type of flying and the pure excitement it brings to flight simming.

Aerobatics offers fun, excitement, and the ability learn more about flying. Your flying precision will improve. With this in mind, it would only be fair to give you this warning: Aerobatics is addictive and you may never want to fly straight and level again!

Happy holidays!

Let me suggest that you take a moment to study some other resources on this subject. While the list is long, I'll boil it down to a couple of organizations: The International Aerobatic Club(IAC) and The Federation Aeronautique Internationale (FAI). The IAC, a division of the Experimental Aircraft Association (EAA), is the world's largest sport aerobatic organization promoting and enhancing the safety and enjoyment of aerobatics. Contact them at www.iac.org or by phone at 920.426.4800.

The FAI, the world's air sports federation, was founded in 1905. It is a non-governmental and non-profit making international organization with the basic aim of furthering aeronautical and astronautical activities worldwide. They can be reached at www.fai.org.

Both of these organizations are great and many other good resources are available out there. Whatever you do, study and, most importantly, start flying.



GET FAST RELIEF FROM SLOW-MOVING AIRPLANES

If you would like to get fast relief from that airplane than has been taking up much needed space, just call *Wings of Hope* and we'll put it to good use.

You'll even get a tax deduction for your contribution. For more than 30 years, *Wings of Hope* has helped to provide airplanes and mission support for humanitarian services. Today more than ever we need your help to continue making progress. So don't look at that airplane as a liability...look at it as an asset for you and *Wings of Hope*. ***It's a win-win situation.***

WINGS OF HOPE
INC.

Spirit of St. Louis Airport
18590 Edison Avenue, Chesterfield, MO 63005, USA
1-636-537-1302 / 800-448-9487 / E-Mail woh206@earthlink.net / <http://www.wings-of-hope.org>

Flying Online!

Improving The Online Flying Experience

Online flight simulator flying continues to expand in popularity and the VATSIM organization is maturing quickly, recently announcing its first worldwide convention and simultaneous regional mini-conventions. While members wait to meet personally at conventions, many meet by flying online every day.



November 2001						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28 Oct 1000-1000 VATSIM Online Day Real time schedule	29 1000-1000 VATSIM Online Day Real time schedule	30 1000-1000 VATSIM Online Day Real time schedule	31 1000-1000 VATSIM Online Day Real time schedule	1 Nov 1000-1000 VATSIM Online Day Real time schedule	2 1000-1000 VATSIM Online Day Real time schedule	3 1000-1000 VATSIM Online Day Real time schedule
4 1000-1000 VATSIM Online Day Real time schedule	5 1000-1000 VATSIM Online Day Real time schedule	6 1000-1000 VATSIM Online Day Real time schedule	7 1000-1000 VATSIM Online Day Real time schedule	8 1000-1000 VATSIM Online Day Real time schedule	9 1000-1000 VATSIM Online Day Real time schedule	10 1000-1000 VATSIM Online Day Real time schedule

The VATSIM website events page shows scheduled with vivid graphic link.

Monitoring of online flying with programs like Enrico Schiratti's *Whazzup* and Michael Frantzeskakis' *ServInfo* routinely show more than one hundred pilots and controllers online during evenings and weekend times



in major world areas. Many more can be seen online during fly-in events, where members converge for flying and air traffic controlling in announced fly-in areas.

I'm seeing a growing number of announcements for scheduled fly-ins. In this issue I'll highlight the well-organized Alpenglow event that was conducted in Europe during October. Then I'll offer information on the many resources available for online flying that can be found through a unique and impressive VATSIM web page. Lastly, I'll provide some refresher training for online pilots, related to Departure Procedures (DPs) and Standard Terminal Arrival Routes (STARs).

VATSIM Worldwide Conventions

Harvey Stein, President of the Board of Governors for the Virtual Air Traffic Network has announced that VATSIM will be holding its inaugural convention in the summer of 2002. This first convention of VATSIM member pilots, controllers, and guests will be held in the North American Region, with other regions holding mini conventions at the same time.

By Doug Horton

VATSIM Stats: All servers, All Maps & Statistics, V-L-50 (Unpublished), AVSIM / FSIMIGHT

Who is Online: Updated in real time

SERVICES - Total: 8

Server Name	IP Address	Location	Description	Connections
ASIA-C	210.45.14.101	Taipei, Taiwan	Central Asian Server - Provided by SATROG	0
ASIA-S	155.114.19.225	Hong Kong	South Asian Server - Provided by SATROG	0
EMEA-C	198.172.149.100	Geneva, Brazil	South American Server	0
EUROPE-C	137.36.41.18	Tel Aviv, Netherlands	Central Europe Server	28
EUROPE-S	213.371.140.40	Italy	EUROPE-S Server - sponsored by Aerosim	25
EUROPE-W	192.32.72.203	Portugal	EUROPE-W Server	0
OSAPAC	193.94.247.171	Australia	OSAPAC Australia/Pacific - sponsored by David Sloan	0
USA-E	191.20.92.189	Ardenburg, VA USA	East USA - Sponsored by CHN.com	21
Total connections				54

ATC - Total: 42

Call Sign	Freq	Name	Rating	ID	Server
ATIS-001	119.000	ATIS-001 119	Senior Student	011900	USA-E
ATIS-002	118.000	ATIS-002 118	Senior Controller	011800	USA-E
ATIS-003	123.000	ATIS-003 123	Student	011230	EUROPE-C
ATIS-004	123.000	ATIS-004 123	Student	011230	USA-E
ATIS-005	123.000	ATIS-005 123	Student	011230	USA-E
ATIS-006	123.000	ATIS-006 123	Student	011230	USA-E
ATIS-007	123.000	ATIS-007 123	Student	011230	USA-E
ATIS-008	123.000	ATIS-008 123	Student	011230	USA-E
ATIS-009	123.000	ATIS-009 123	Student	011230	USA-E
ATIS-010	123.000	ATIS-010 123	Student	011230	USA-E
ATIS-011	123.000	ATIS-011 123	Student	011230	USA-E
ATIS-012	123.000	ATIS-012 123	Student	011230	USA-E
ATIS-013	123.000	ATIS-013 123	Student	011230	USA-E
ATIS-014	123.000	ATIS-014 123	Student	011230	USA-E
ATIS-015	123.000	ATIS-015 123	Student	011230	USA-E
ATIS-016	123.000	ATIS-016 123	Student	011230	USA-E
ATIS-017	123.000	ATIS-017 123	Student	011230	USA-E
ATIS-018	123.000	ATIS-018 123	Student	011230	USA-E
ATIS-019	123.000	ATIS-019 123	Student	011230	USA-E
ATIS-020	123.000	ATIS-020 123	Student	011230	USA-E
ATIS-021	123.000	ATIS-021 123	Student	011230	USA-E
ATIS-022	123.000	ATIS-022 123	Student	011230	USA-E
ATIS-023	123.000	ATIS-023 123	Student	011230	USA-E
ATIS-024	123.000	ATIS-024 123	Student	011230	USA-E
ATIS-025	123.000	ATIS-025 123	Student	011230	USA-E
ATIS-026	123.000	ATIS-026 123	Student	011230	USA-E
ATIS-027	123.000	ATIS-027 123	Student	011230	USA-E
ATIS-028	123.000	ATIS-028 123	Student	011230	USA-E
ATIS-029	123.000	ATIS-029 123	Student	011230	USA-E
ATIS-030	123.000	ATIS-030 123	Student	011230	USA-E
ATIS-031	123.000	ATIS-031 123	Student	011230	USA-E
ATIS-032	123.000	ATIS-032 123	Student	011230	USA-E
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ATIS-043	123.000	ATIS-043 123	Student	011230	USA-E
ATIS-044	123.000	ATIS-044 123	Student	011230	USA-E
ATIS-045	123.000	ATIS-045 123	Student	011230	USA-E
ATIS-046	123.000	ATIS-046 123	Student	011230	USA-E
ATIS-047	123.000	ATIS-047 123	Student	011230	USA-E
ATIS-048	123.000	ATIS-048 123	Student	011230	USA-E
ATIS-049	123.000	ATIS-049 123	Student	011230	USA-E
ATIS-050	123.000	ATIS-050 123	Student	011230	USA-E

The VATSIM Resources page contains many links for useful information.

Harvey indicates that VATSIM hopes to be able to simulcast all the conventions together. Staying true to a Board commitment, VATSIM members will vote on the location in North America that will host this event. Any member of any region can vote, as the Board hopes to have members from all over the world attend the convention. In 2003, the main VATSIM convention will be held outside North America, and again, the membership will vote on the city to host the convention.

The VATSIM Board has chosen seven cities in North America from which the convention city will be selected, and "the majority will rule." VATSIM has an automatic online web page at <http://cert.vatsim.net/vatsimnet/vote.asp> where members can register their vote.

The seven candidate cities are San Diego, Denver, Minneapolis, Toronto, Philadelphia, Atlanta, and Dallas. The city with the most votes will host the 2002 convention, and though the date is not firm yet, it will be held in July or August of 2002. VATSIM members who live in the area of the winning city will be asked to help set up the convention, and voting will be counted up to 2400 UTC on December 31, 2001.

Fly-Ins

A few issues ago, I highlighted the subject of fly-ins, and this subject bears repeating, because fly-ins can provide one of the most realistic online flying experiences you can have. There is an increased realism in having more pilots and more controllers converging on a single airport, or geographical area with multiple airports, compared to the usual online flying experience.

A great example is the Alpenglow fly-in, sponsored by the Eurowings Virtual Airline and the VATSIM SAG (Switzerland, Austria, Germany) Group, with the online flying resources of VATSIM.net. Typically, a fly-in is

announced on all the flight simulation Internet sites. By the time you read this, of course, the Alpenglow fly-in will be completed, and the website may no longer be available. But it's a great example of the time and efforts expended by the organizers to put together a very realistic and meaningful flight experience for all participants



Clickable map of the Alpenglow fly-in area, which links to details about each fly-in airport.

The main Alpenglow web page is very typical of other fly-in announcements. It provides the time, geographical area, and general comments about the event. Of particular interest in this case is the commitment of the organizers to have at least 25 controllers online for the fly-in, including some who are controllers in real life. On the left side of the page are links to the details, which typically include information for both participating pilots and controllers, such as scheduling, registration, and airspace considerations. There is also information on the resources needed, such as flight simulator scenery, aircraft, and navigation charts, including arrival and approach charts.

Clicking the Airport Information link takes you to a web page with a clickable map of the fly-in area. As an example, clicking LOWW on the far right-hand side of the map brings up a web page with details about the Vienna, Austria airport. In this case, you'll see that the LOWW page provides some airport details, and it indicates that the FS 2000 default scenery is sufficient.



The main Alpenglöw web site provides an overview and basic instructions for the fly-in event. Multiple links are provided for fly-in details.

This page also provides a link for downloading a Eurowings Bae 146-200 aircraft developed by the International Aircraft Development Group. Clicking the link to LOWW on this page provides even more airport information, as it takes you to the Vienna Schwechat Airport page.



Links on the Alpenglöw web site provide information about individual airports and recommended aircraft and scenery.

At one time during the event, ServInfo showed that there were 331 pilots and controllers connected worldwide on VATSIM, with 13 controllers and 54 pilots online in Germany alone – most for this Alpenglöw fly-in. The organizers tell me that the event was a great success, and you may find that their summary page with many screenshots is still active. My suggestion is to keep your eyes open for more fly-in announcements and try one. Several fly-ins have helped set new records for the number of simultaneous controllers and pilots online.

VATSIM Events and Other Resources

In addition to periodic fly-ins, there are regular weekly and monthly events that you can find on the VATSIM events calendar page. This page provides vivid graphic announcements of a wide variety of events. You'll see that some are scheduled at the same time every week, while others are scheduled less often. You may find fly-in announcements on this page also. Note that each event graphic is a clickable link.

Looking for charts? Looking for weather information? Looking to see what controllers and pilots are online? Somewhat inconspicuously located on the VATSIM website is a page (<http://www.vatsim.net/status/vatserver.htm>) with a very large number of linked resources. I wish to highlight this page for two reasons. First, it links to an amazing number of informative resources. Second, I find it nearly impossible to find from the VATSIM home page.

This "somewhat hidden" resource page also contains a variety of helpful and surprisingly informative links, such as for weather maps, METAR reports, approach plates, charts, airport information, *Squawkbox* and *ProController* software, and a great deal of other useful information.

Arrival Procedures and STARs

Now it's time for some training. Most online pilots understand the basics of flying, and with add-on programs like the ProFlight, Radar Contact, and RealATC series, many flight simulator pilots learn the appropriate procedures and terminology. The new ATC feature in Flight Simulator 2002 will also be a great help for learning. Many of those at Microsoft who developed the ATC feature for FS 2002 are real pilots, and the terminology and procedures are very realistic.

However, the FS 2002 ATC is very much geared toward general aviation, and it does not include use of defined departure and arrival procedures, which can be used when flying online. For simulated airline flying online in particular, these procedures are critically important and understanding the details can "make or break" an online flying experience.

If you already know the name of the STAR you're looking for, you can view and print all STARs for the U.S. from the Internet, courtesy of EchoFlight. If you wish to search for charts by region, you can work your way through VATSIM regional websites and linked ARTCC/FIR ("Center") sites. Another source for charts for the U.S., Mexico, and Chile is Jay Marin's Clearance Unlimited site.

To begin the refresher, let's talk about Standard Terminal Arrival Routes, which are commonly called STARs. The official description from the U.S. Aeronautical Information Manual (AIM) reads as follows:

"A STAR is an ATC coded IFR arrival route established for application to arriving IFR aircraft destined for certain airports. The purpose is to simplify clearance delivery procedures and facilitate transition between enroute and instrument approach procedures."

That's the definition, but what does a STAR look like and how do you fly it? Let's look at an example for Chicago O'Hare, for arrivals from the northeast, including arrivals from Europe. The applicable STAR is called the Pullman arrival, currently version four (PMM4), as shown in the diagram.

As you can see, the Pullman Four STAR shows a top down "navigation view" of this arrival route into O'Hare. Actually, there are four routes shown. The first is the basic STAR, which begins at the Pullman VOR in Michigan. This is denoted as PMM.PMM4 on real flight plans.

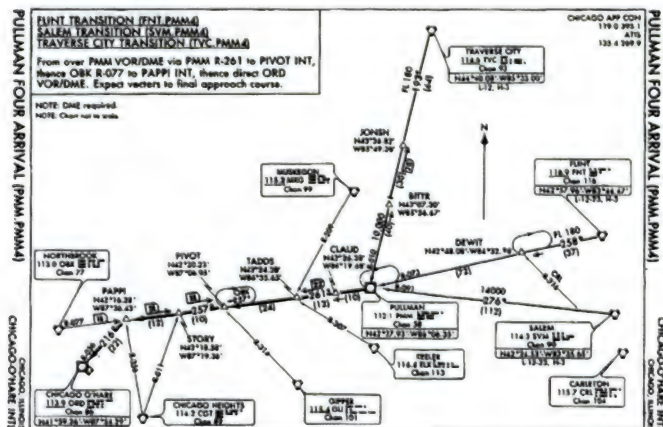


Diagram of the Pullman Four STAR for arrivals into Chicago O'Hare from the northeast.

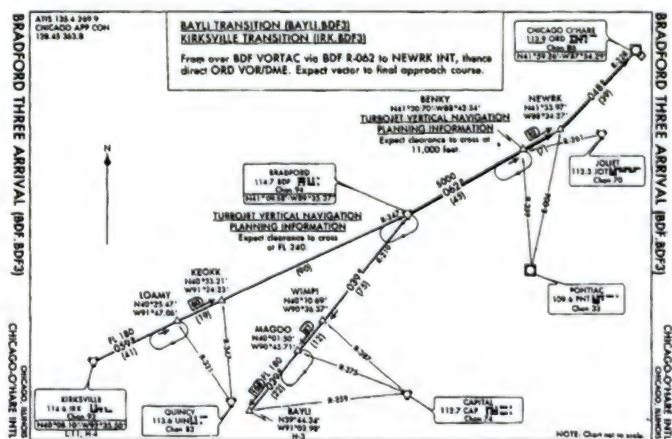
For more orderly flow into the STAR, there are three "transitions" shown. These begin at the Flint, Salem, and Traverse City VORs, which are also in Michigan. The transitions would be denoted on flight plans, respectively, as FNT.PMM4, SVM.PMM4, and TVC.PMM4. The various legs of PMM4 show courses and distances, which are not necessarily to scale or oriented to correct directions on STAR charts.

The required directions for flying the PMM4 STAR are contained in the upper left-hand box of the chart, which indicates, in expanded language:

"From over the Pullman (PMM) VOR/DME via the 261° radial to the PIVOT intersection, thence via the Northbrook (OBK) VOR 077° radial to the PAPPI intersection, then direct to the O'Hare (ORD) VOR/DME, expect vectors to final approach course."

In actual operations, ATC may direct variations and provide radar vectors that lead directly to onward points of the STAR or directly to an Instrument Approach Procedure (IAP). Also, pilots would not expect to actually be vectored to the ORD VOR, which is the last point of the STAR. This is common with nearly all STARs, whereby a final point is provided for reference on or near the airport, so that in case of loss of communications, pilots can continue in the general direction of the airport and hold or land in accordance with their last clearance.

The Pullman STAR does not show any crossing restrictions, though crossing altitudes for various points may be issued by ATC. In contrast, the Bradford Three (BDF3) STAR, for arrivals into O'Hare from the southeast, has two crossing restrictions, as shown in the accompanying diagram. Turbojet aircraft can "expect clearance" to cross the Bradford (BDF) VOR at flight level 240 (24,000 feet MSL) and to cross the BENKY intersection at 11,000 feet.



The Bradford Three STAR show "expected" crossing restrictions at the Bradford VOR and the BENKY intersection.

Here are some further directions from the U.S. Aeronautical Information Manual, which apply to real pilots, and which if followed by online pilots, will add to the realism:

1. STAR's may have mandatory speeds and/or crossing altitudes published. Other STAR's may have planning information depicted to inform pilots what clearances or restrictions to "expect." "Expect" altitudes/speeds are not considered STAR crossing restrictions until verbally issued by ATC.

NOTE: The “**expect**” altitudes/speeds are published so that pilots may have the information for planning purposes. These altitudes/speeds should not be used in the event of lost communications unless ATC has specifically advised the pilot to expect these altitudes/speeds as part of a further clearance.

2. Pilots navigating on a STAR shall maintain last assigned altitude until receiving authorization to descend so as to comply with all published/issued restrictions. This authorization will contain the phraseology “DESCEND VIA.”

- (a) A “descend via” clearance authorizes pilots to vertically and laterally navigate, in accordance with the depicted procedure, to meet published restrictions. Vertical navigation is at pilot’s discretion, however, adherence to published altitude crossing restrictions and speeds is mandatory unless otherwise cleared. (Minimum En Route Altitudes [MEA’s] are not considered restrictions; however, pilots are expected to remain above MEA’s).

EXAMPLE:

1. **Lateral/routing clearance only.** “Cleared Hadly One arrival.”

2. **Routing with assigned altitude.**

“Cleared Hadly One arrival, descend and maintain Flight Level two four zero.”

“Cleared Hadly One arrival, descend at pilot’s discretion, maintain Flight Level two four zero.”

3. **Lateral/routing and vertical navigation clearance.**

“Descend via the Civit One arrival.”

“Descend via the Civit One arrival, except, cross Arnes at or above one one thousand.”

NOTE:

In Example 2, pilots are expected to descend to FL 240 as directed, and maintain FL 240 until cleared for further vertical navigation with a newly assigned altitude or a “descend via” clearance.

- (b) Pilots cleared for vertical navigation using the phraseology “descend via” shall inform ATC upon initial contact with a new frequency.

EXAMPLE: “Delta One Twenty One descending via the Civit One arrival.”

3. Pilots of IFR aircraft destined to locations for which STARs have been published may be issued a clearance containing a STAR whenever ATC deems it appropriate.

4. Use of STAR’s requires pilot possession of at least the approved textual description. As with any ATC clearance or portion thereof, it is the responsibility of each pilot to accept or refuse an issued STAR. Pilots should notify ATC if they do not wish to use a STAR by placing “NO STAR” in the remarks section of the flight plan or by the less desirable method of verbally stating the same to ATC.

Remember that STARs are part of the *arrival phase*, which is followed by the *approach phase*. In the next issue, we’ll discuss both in more detail, learning how to proceed through a STAR to an instrument approach, or how to enter an instrument approach directly without using a STAR.

For now, I offer the mnemonic “P-T-A-C” for ATC directions for approaches. The mnemonic represents Position-Turn-Altitude-Clearance, as a convenient way for pilots to remember what to expect from ATC as clearance for an approach. Here’s an example that might follow the Bradford STAR, while flying the 048° leg inbound from the NEWRK intersection:

“United three-zero-four, Chicago Approach, five miles from BURKE; turn right heading zero-six-zero; maintain seven-thousand until established on the localizer; cleared ILS runway nine right approach.”

The pilot’s read back would sound the same, except slightly abbreviated to:

“Chicago Approach, United three-zero-four, turn zero-six-zero, seven-thousand until established, cleared ILS nine right approach.”

By the way, make sure you understand the being “cleared for the approach” by Approach Control is separate from being “cleared to land” by Tower.

Until the next issue, I’ll see you in the air flying online!

Searching For More Information

You can find the Whazzup program on the Internet at:

<http://www.schiratti.com/whazzup.html>

You can find Michael Frantzeskakis’ *ServInfo* Program at:

<http://avsim.com/hangar/utis/servinfo/home.htm>

The Vatsim main website is at

www.VATSIM.net

You can find details on VATSIM regional mini conventions at:

<http://www.vatsim.net/regions.html>

You can find information on the Vienna Schwechat Airport page at:

www.worldairportdata.com

The summary page on the Alpenglow fly-in is at:

<http://www.ewgva.de/online/reports/alpenglow061001/flightreport.html>

VATSIM events calendar page is located at:

<http://www.calsplus.net/vatsim>

View and print all STARs for the U.S. courtesy of EchoFlight, at:

<http://edj.net/cgi-bin/echoplate.pl?arrivals>

You can find Jay Marin’s Clearance Unlimited site at:

<http://www.clearanceunlimited.com/>

Round Robin Adventures

Cargo Run To Salt Lake City

For this exercise, we are flying for a cargo-carrying airline based out of Provo Utah. This airline, Alpine Air, exists in real life and was recently featured in *Airways* magazine. The route is not one of their regular flights, but a charter. This is a first of two parts, and in the next issue we will fly the Provo to Sacramento route. You can check further on Alpine Air and their operations at their web site.

Al Pelletier

Alpine Air flies the Beech 1900, and you'll find one at www.simwings.net, in the Full Throttle/Utah directory. You will also find a Boeing 737, which also is suitable for this exercise. There are also maps and notes pertaining to this trip that you can download. Of course, there is nothing wrong with flying the FS 2002 default Beech King Air, or the Boeing 737.

This Round Robin was flown with Microsoft Flight Simulator 2002, but can be flown with any Flight Sim that has the required airports and nav aids included in its own database.

This is the route for the Round Robin you'll fly in this issue of *Flight Simulator World*:

Provo Municipal Utah (KPVU)

to

Salt Lake City Intl (KSLC)

to

Denver Intl (KDEN)

to

Ogden-Hinckley Utah (KOGD)

and back to

Provo Municipal (KPVU)

Total distance is about 830 nautical miles.



Breathtaking FS 2002 screenshot view of the Unita mountains that you will see during our route.



About Round Robins

If you have done previous Round Robins, skip the next paragraph, jump right in, and have fun. For the experienced flyers, please be patient through all of the explanations, directions and extras. I direct this at newcomers to the flying world. I must stick to plain language.

For those who are new to this, Round Robins are published with the intent of having Flight-Simmers fly, look at the scenery, refresh our Geography, practice our cross country navigation, do some approaches at different airports all over the world, and have some FUN.

In the message, you will be getting info like: airport departure and arrival runway numbers, VOR and AD frequencies enroute, two or three middle airport destinations, and instructions for either VFR or instrument approaches. Then back to your point of departure (Round

Sectional map of Salt Lake City

Robin). You will also be given ILS and LOM frequencies, visibility minimums, procedures etc. You will get info on the scenery needed to complete the flight and where to get it. Also, who created the scenery (for non-commercial) and a little background on the geography of the area. After you do a few of these, you will have a much better command and understanding of the different types of published procedures. You will learn to handle a lot of information in a very short time, while still maintaining control of your aircraft.

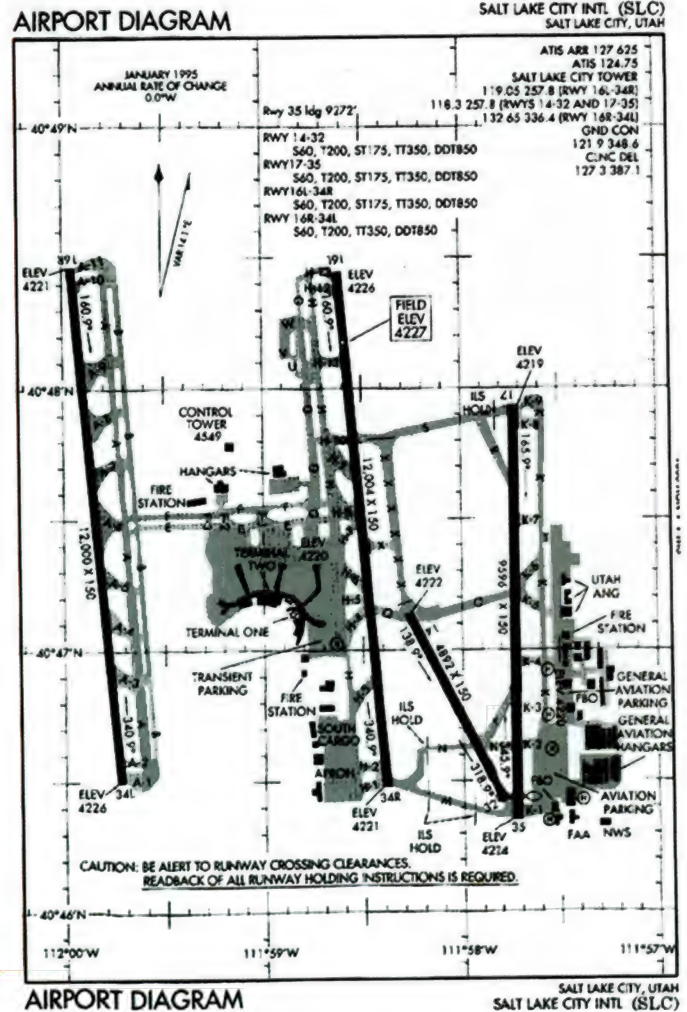
May I suggest, that you READ the route a couple of times before starting out, so that you'll have the flight plan fairly clear in your mind. Especially in a fast medium jet, there isn't much time to spare and definitely no room for errors. Remember this rule: "Never let an aircraft take you somewhere your brain didn't get to five minutes earlier".

Note that for the purpose of this adventure, we will pretend that we are getting Radar vectors to different VORs or ILS interception points. In the "Real" world of today, aircraft usually get vectors to the interception points, to insure proper separation. I'm also assuming that you will have a good look at the Approach Plates for each segment. If they are not all published in the magazine, you can get them at my web site also. Check for address on page 34.

First leg

**Provo Municipal (KPVU)
To
Salt Lake City Intl (KSLC)
Approximately 41 nm**

- ➔ Select your starting point at the Provo Municipal airport cargo ramp from the simulator menu.
- ➔ Make the season to winter, and pick January 18th for the date. Set the weather to Stratus clouds 3/8 coverage, visibility 20 nm, and wind from 310 at 12 kts. No precipitation.
- ➔ Set your clock to 08:30 local time.
- ➔ Dial in the Fairfield (FFU) VOR at frequency 116.6 on your NAV 2 radio, and the LOC (I-UUH) at frequency 111.9 on NAV 1. *NOTE: In FS 2002, I used the ATC for this trip. It worked really well, if you edit the weather exactly as prescribed. The only problem was at Salt Lake City. On some occasions I was given runway 34L and at other times runway 34R. The frequency for runway 34R ILS is 109.5 and the course is 341degrees.*



A detailed view of the cockpit of a Cessna 441 Conquest II. The instrument panel features a central digital display showing altitude and speed, surrounded by analog gauges for fuel, oil, and engine parameters. The throttle quadrant is visible on the right side, and the control yoke is partially seen on the left. The cockpit is well-lit, and the overall design is modern and functional.

Second Leg

**Salt Lake City (KSLC)
To
Denver Intl (KDEN)
Approximately 350 nm**

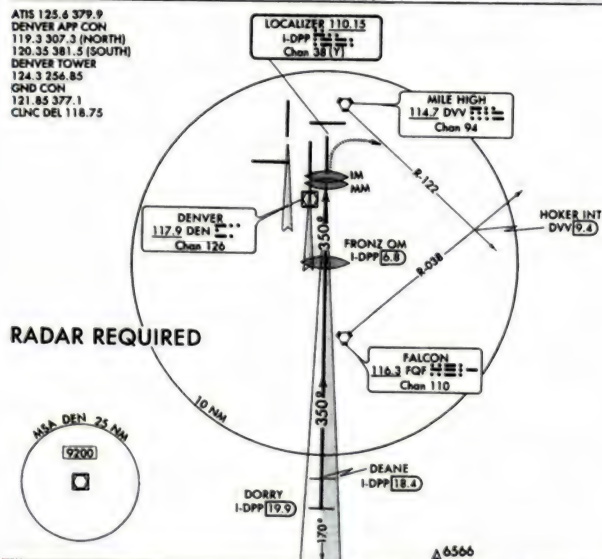
- ➔ Your clock should be at 09:45 local time. The weather is the same as the first leg. You can select gate 8/cargo from the go to airport menu, if you are not already there.

(Right) Denver approach plate

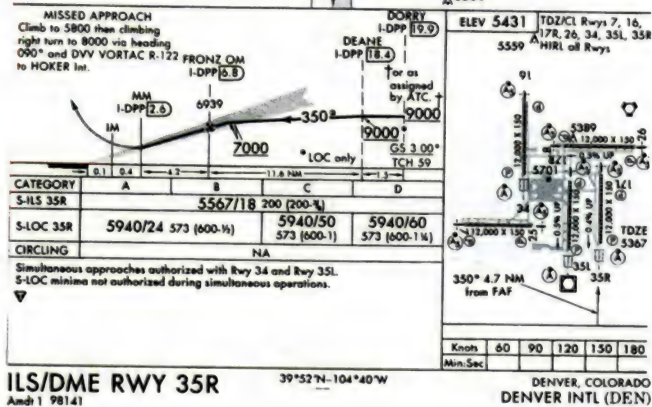
(Below) The Denver – Salt Lake City route

DENVER INTL (DEN)
DENVER, COLORADO

ATIS 125.6 379.9
DENVER APP CON
119.3 307.3 (NORTH)
120.35 381.5 (SOUTH)
DENVER TOWER
124.3 256.85
IGND CON
121.85 377.1
CLNC DEL 118.75



MISSED APPROACH:
Climb to 5800 then climbing
right turn to 8000 via heading
090° and DVY VORTAC R
to HOKER Int.



ILS/DME RWY 35R

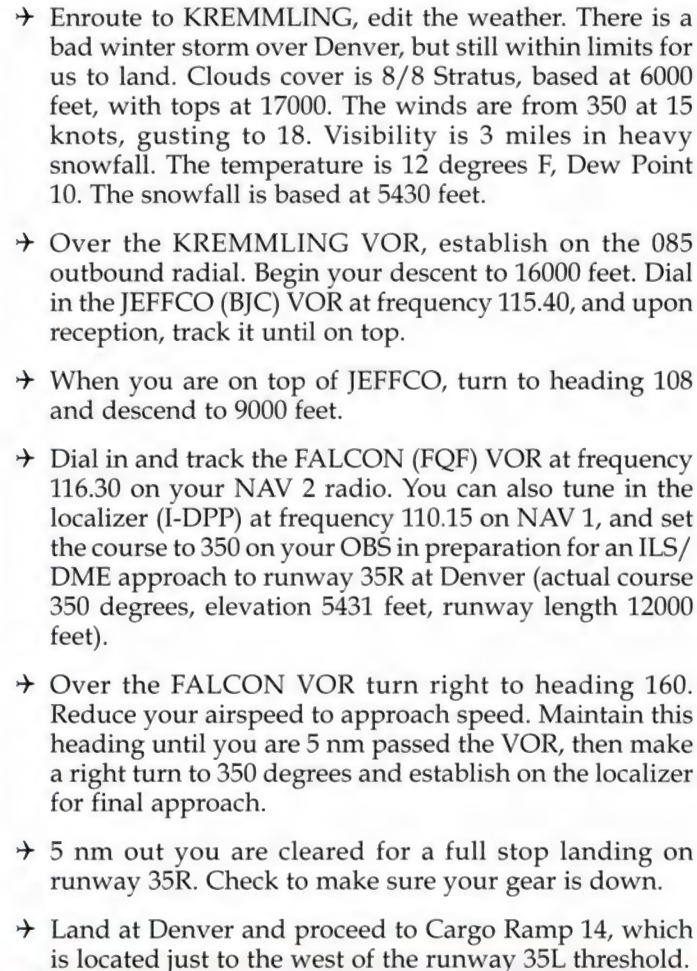
Amdt 1 98141

39°52'N-104°40'W

DENVER, COLORADO
DENVER INTL (DEN)



Sectional map of the Denver area

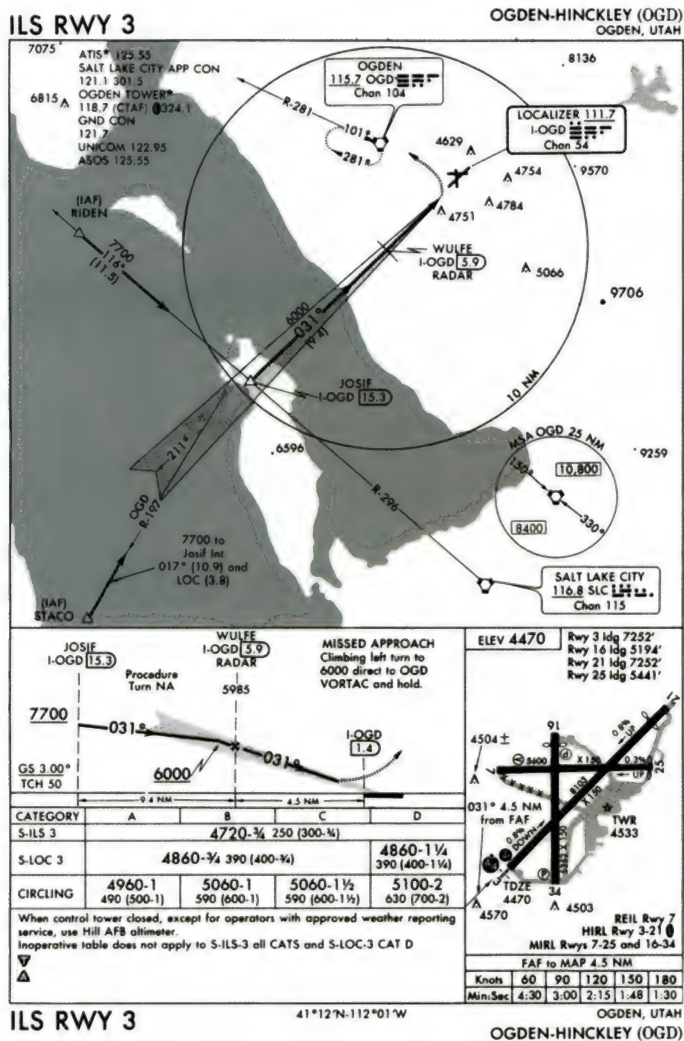


Third Leg
Denver Intl (KDEN)
To
Ogden-Hinckley (KOGD)
Approximately 360 nm

- ➔ Your clock should be set to 15:00 local time. The weather is even worse, so turn the visibility further down to 2 nm.
- ➔ Position your aircraft at the Denver Cargo Ramp 14 from the simulator menu, if you are not already there.
- ➔ Dial in the JEFFCO (BJC) VOR at frequency 115.40
- ➔ Get taxi instructions to runway 35R. Note that there is a refueling area just to the east of Cargo Ramp 14, so check to see if you need to fill your tanks.
- ➔ Takeoff from runway 35R and maintain runway heading, climbing to 7500 feet. Then make a left turn to heading 255. Continue climbing to 23000 feet and track the JEFFCO VOR until on top.
- ➔ On top of JEFFCO, establish on the 262 outbound radial. Dial in the KREMMLING (RLG) VOR at frequency 113.80, and track it until on top.

Cargo Run To Salt Lake City

ILS RWY 3



Approach plate for Ogden-Hinckley

- ➔ On top of RLG turn left to heading 257. Dial in the MEEKER (EKR) VOR at frequency 115.20 and track it until on top.
- ➔ Over EKR establish on the 272 outbound radial. Dial in and track the VERNAL (VEL) VOR at frequency 108.20 and track it until on top.
- ➔ When you are over VEL dial in and track the Salt Lake City (SLC) VOR at frequency 116.80 on your NAV 2 radio.
- ➔ 50 nm out of SLC begin your descent to 11000 feet. Dial in the localizer at frequency 111.7 on your NAV 1 radio, and set 031 on your OBS in preparation for an ILS approach to runway 3 at Ogden-Hinckley (actual course 031 degrees, elevation 4470 feet, and runway length 8100 feet).
- ➔ 20 nm out of the SLC VOR reduce your airspeed to 200 kts or below.
- ➔ Overfly the SLC VOR then turn right to heading 296, and continue your descent to 8500 feet.

- ➔ Continue with the approach and establish on the localizer.
- ➔ 5 nm back you are cleared for a full stop landing on runway 3. Check to make sure your gear is down.
- ➔ Land at Ogden-Hinckley, and exit the runway on the first ramp right, then proceed to the Cargo area.

Fourth Leg

**Ogden-Hinckley (KOGD)
To
Provo Municipal (KPVU)
Approximately 67 nm**

- ➔ Make sure your clock is set to 17:00 local time. Clear all the weather from the menu. We will do a scenic VFR flight back to Provo Municipal.
- ➔ Select the Ogden-Hinckley Cargo area from the menu, if you are not already there. If you are flying with FS 2002, or any simulator with ATC capability, ask for a departure to the south.
- ➔ Tune in the Provo VOR at frequency 108.4
- ➔ Taxi to and takeoff from runway 3, making a left climbing turn to heading 148, and climb to 8500 feet.
- ➔ Track the PROVO VOR and proceed with a visual approach to runway 13.
- ➔ Watch for the great sunset to your starboard wing, on the way down to Provo. *Note: You must have the date to Jan 18 and the correct time to get this gorgeous view!*
- ➔ Continue with a visual approach and land at Provo runway 13.
- ➔ Proceed to cargo area and shut down your engines.



Beautiful sunset during landing at Provo Municipal



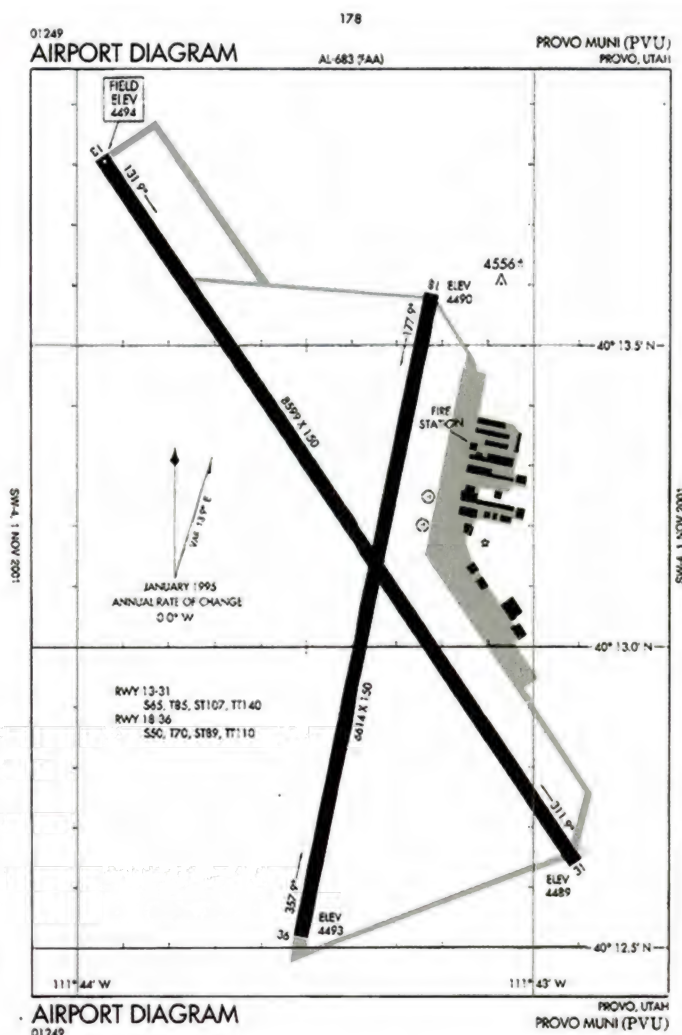
Virtual cockpit view climbing out of Provo, Utah

Welcome home!

About the author.....

Al was born in Matane, Quebec in 1948. He served 25 years as aircrew in the Royal Canadian Airforce, in a non-pilot role. His job centered on RADAR, Forward Looking Infrared (FLIR) and radio communications. He has served over 6,000 hours in everything from the Canadair Argus, the Tracker, a Sea-King Helicopter, DC-3s and P-3s.

Al retired from the RCAF in 1990 and is now the owner of a computer retail store. His hobbies include fishing, gardening and, of course, flight simulation.



Approach plate for Provo, Utah

Additional Information

You can check the Alpine Air operation route and schedules at:

<http://www.g-web.net/alpineair0>

Acknowledgments

Many thanks to Chris Squire for test flying the route. Chris is a retired military pilot with over 12,000 hours of flying.

Also, thanks to Major Tom Mitchell of Comox for all the logistic help.

As a reminder, the navigation charts are **not to be used for real world navigation**.

Cheers and keep on reading *Flight Simulator World*.

Getting Real

Training For An Instrument Rating Part 4

In the previous installments of this series, I described how I used my flight simulator setup at home to practice many of the required instrument flight maneuvers, such as holds and approaches, as well as how I flew my first practice flights with actual instrument clearances and real ATC communications.

In this final installment of the instrument rating series, I will describe my final practice flights for the instrument rating checkride. This includes learning the required instrument maneuvers, planning and flying the instrument cross-country training flight, experiencing some unplanned practice with icing conditions, and how I prepared for, performed, and passed the required checkride (practical test) with an FAA-designated flight examiner.

By Doug Horton

Studying Instrument Maneuvers

I have previously described learning about holds, VOR tracking, and ILS, VOR, and NDB instrument approaches. It was necessary to renew my proficiency on these, as well as my working knowledge on slow flight, stalls, and steep turns from my private pilot training. Fundamental understanding of these maneuvers under instrument conditions is important. The key difference is that for the instrument rating, these maneuvers are practiced "under the hood" with a view limiting device, such as the Foggles device.

Not only is proficiency in approaches required for the instrument rating checkride, but instrument-rated pilots must also continue to practice them to maintain the rating. The current requirement is practicing holds and VOR tracking, plus performing six practice or real approaches at least every six months. And since these are continuing requirements, a useful study aid to use to maintain proficiency is Gleim's Instrument Maneuvers book.

Instrument Cross-Country Training

As indicated in the FAA requirements for an instrument rating, a student is required to perform a 250-mile cross-country trip under simulated (or real) instrument conditions.

The trip must include landings and different types of instrument approaches at several airports.

My instructor suggested that I plan the trip to include three intermediate airports with an approach at each, as well as an approach on return to my home field of West Chicago DuPage (DPA). He also suggested that I include one each of class C and D airports and an uncontrolled airport.

After discussing possible routes, we agreed upon going first to SQI - Sterling Whiteside in Illinois, which is uncontrolled (no control tower). Then to Madison, Wisconsin, a large class C airport with approach control and tower. Then to Kenosha, Wisconsin, which is a class D field with control tower. Keep in mind that this is all taking place in late winter. After completing plans the night before and the morning of the planned flight, when checking the weather I discovered that there was ice on the runways at both Madison and Kenosha. Consequently, it was time to re-plan for a flight south instead of north!

After adding up the total leg mileage to make sure the flight would satisfy the 250-mile requirement, I put together another plan with similar airport variety. The revised plan was to fly to Kankakee (IKK), which is uncontrolled; Bloomington (BMI), which is a class D towered airport; then Peoria (PIA), a class C airport with approach control and tower. With this selection



Instrument maneuvers are practiced with a view-limiting device such as the Foggles product.

of airports, I then filed four separate flight plans, one for each leg.

To fulfill the instrument cross-country requirement for performing at least three types of instrument approaches, and after looking through the available approaches, my instructor recommended that I plan

on the following four approaches:

- Kankakee VOR runway 22
- Bloomington LOC runway 29
- Peoria NDB runway 31
- DuPage ILS runway 1L

We planned one extra approach in case one of the selected approaches was out of service.

You can see the relationship among DuPage, Kankakee, Bloomington and Peoria airports on the highlighted portion of IFR Enroute Low Altitude chart L-23. It was good that my instructor added the extra approach because the NDB at Peoria was not operating. Interestingly, as I flew this approach "under the hood," my instructor gave me simulated NDB vectors, based on his visual sighting of the airport.

All my approaches were acceptable, and the only surprise was getting a clearance routing upon departure from Peoria that was quite different than what I filed. The routing required that we depart the airport on a VOR radial, and then intersect a low-altitude airway northeast that is a radial of the Bradford VOR.



I took the instrument practical test in Fox Flying Club's Piper Archer N8150A.

The instrument cross-country was fulfilling, yet quite tiring as I flew all four legs "under the hood," except for landings, taxiing and the first minutes of take-offs. Overall, I logged 4.2 hours of flight time, with 2.9 hours of that being "under the hood." This was a most tiring yet rewarding experience, as I felt afterward that I was ready for the instrument practical test with an FAA examiner.

Icing Practice

Three days after my instrument cross-country flight, I scheduled another lesson to work on approaches and flying under ATC control. I filed IFR from DuPage (DPA) to Kenosha, Wisconsin (ENW), because my instructor indicated there were some interesting approaches we could practice at Kenosha. Also, I'd be able to communicate with several air traffic controllers during a relatively short flight, to provide practice in using proper terminology.

I filed for an altitude of 5000 feet from DPA to ENW, not being sure whether I'd get it, because of the need to not interfere with arrivals or departures from the busy O'Hare Class B airspace. My departure clearance indicated:

"3000, expect 4000 after 10 minutes"

So sure enough, I wasn't going to get the altitude I requested. Shortly after takeoff, I was directed to climb from 3000' to 4000', and I'd already been in the clouds since about 2500' AGL.

As I leveled out at 4000', my instructor said, "watch your airspeed," and I immediately became confused. What I saw was decreasing airspeed, while the attitude indicator showed level pitch and bank. At the same time, the altimeter and vertical speed indicators were steady, and I hadn't heard any change in engine sound, so there were no indications that I was losing airspeed because I was climbing.

As the airspeed continued toward zero, and I continued to wonder what was happening, my instructor said, "I recommend you turn on Pitot heat!" What a lesson! I'd experienced freezing of the Pitot tube, but that wasn't all! My instructor suggested I look out from "under the hood," and I saw that the windshield and leading edges of the wings were also starting to accumulate ice! My instructor suggested I ask ATC for 5000 feet to see if we could get on top of the clouds and the freezing moisture therein. After ATC answered affirmatively to my request, I climbed on top of the clouds and the bright sun quickly melted the ice.

Getting the ice melted was a relief, but I still faced descending through the clouds. As I began my descent and



Gleim's Instrument Maneuvers text can be used for initial instrument training and for continuing refresher training.



Section of IFR Enroute Low Altitude chart L-23 showing the relationships among DuPage, Kankakee, Bloomington, and Peoria airports.

II. Preflight Procedures

- Aircraft Systems Related to IFR Operations
- Aircraft Flight Instruments and Navigation Equipment
- Instrument Cockpit Check Air

III. Air Traffic Control Clearances and Procedures

- Air Traffic Control Clearances
- Compliance with Departure, En Route, and Arrival Procedures and Clearances
- Holding Procedures

IV. Flight by Reference to Instruments

- Straight and Level Flight
- Change of Airspeed
- Constant Airspeed Climbs and Descents
- Rate Climbs and Descents
- Timed Turns to Magnetic Compass Headings
- Steep Turns
- Recovery from Unusual Attitudes

Note that at least two of the tasks, A through E, as selected by the examiner, are performed without the use of the Attitude Indicator and Heading Indicator. Task F is performed with all available instruments and Task G is performed without the Attitude Indicator.

V. Navigation Systems

Intercepting and Tracking Navigational Systems and DME Arcs

VI. Instrument Approach Procedures

- Non-precision Instrument Approach
- Precision Instrument Approach
- Missed Approach
- Circling Approach
- Landing from a Straight-In or Circling Approach

VII. Emergency Operations

- Loss of Communications
- Loss of Gyro Attitude and/or Heading Indicators

VIII. Postflight Procedures

Checking Instruments and Equipment

first approach, we began to pick up ice again. Thereafter, we went through three cycles in which my approaches took us into warmer air near the ground that melted the ice, followed by subsequent approaches in the clouds with some ice building up again.

I landed at Kenosha and the warmer air melted all the ice, but I still faced the return trip. Though I tried to get "on top," ATC left us at 4000 feet and we carried some ice on the leading edges of wings and stabilator (elevator) – enough to slow the aircraft a bit, but not enough to put us in danger. Only after landing back at DuPage did we shed the ice and get back to the peace of being on the ground. I'm confident that my instructor didn't plan the icing exercise, and I'm confident we weren't in danger, but it was new to me and it was a most valuable and interesting training exercise. I'll plan to stay out of the clouds when the temperature is below freezing!

Practical Test Standards

The framework of flight test requirements is listed in the FAA Practical Test Standards, including specific requirements for "passing" each standard during the test. Specific requirements fall into the following categories:

I. Preflight Preparation

- Weather Information
- Cross-Country Flight Planning

intercept and following of ILS localizer and glideslope – to a missed approach.

- ➔ Vectors for VOR approach to DKB runway 27, which involves flying outbound on the DPA VOR 277° radial. This approach was performed without AI and DG – to a missed approach.
- ➔ After climbing out of the missed approach, vectors to the southwest of DKB, performing recovery from unusual attitudes, without the AI.
- ➔ Vectors for LOC DME approach to DKB runway 2, with circling to land on runway 20.

The flight portion seemed very straightforward and I was much less nervous than I had been on my Private Pilot flight test. After landing and taxiing back to the DeKalb FBO, I felt good about the test, and as I shut down the engine, the examiner shook my hand and said simply, “congratulations.”

Reflections and the Role of Flight Simulation

The overall instrument training process took me about five months, which I’m told is about average. There are short courses that provide concentrated training for an instrument rating in about two weeks, with a checkride on the last day. In my own case, I questioned my ability to retain so much information and retain instrument flying proficiency after a short course, so I chose to work with my regular instructor over a period of several months.

In reflecting on my experience with instrument training, I’m confident that my flight simulation experience helped me more for instrument training than in private pilot training, for at least two reasons:

- ➔ Most flight simulation flying is focused on instruments, because the outside views are limited, or because many of us don’t often change views away from the panel. This was a slight negative in my private pilot training, as I needed to learn to “get my head out of the cockpit” in looking for other aircraft and for flying by reference to the outside view for pitch and bank.
- ➔ I knew a great deal about ATC procedures and terminology from flying with the Flight Shop and ProFlight series of ATC adventures, flying online with simulated ATC controllers on SATCO (now VATSIM), and from ATC flying with the Flight Unlimited and Fly! series programs. I’ve also made it a practice to listen to real ATC during my commercial airline flights, when possible – United Airlines pilots often make ATC available on the entertainment system. Nevertheless, I admit to being a bit nervous the first time I actually flew under real ATC. My instructor commented about how quickly I seemed to learn ATC procedures, but in reality, he was observing my applying years of flight simulation experience to flying with real ATC.

Final Observations

I knew about instrument approaches from simulator flying, although I assumed that I knew more than I did. In particular, I knew next to nothing about the vertical requirements of approaches, including missed approach procedures. Also, I knew about ILS approaches only; I didn’t know anything about VOR, NDB, and other types of approaches that are used in real flying.

As an example, look at the VOR/DME approach for DeKalb, Illinois runway 27, which was part of my instrument practical test. This approach requires flying outbound from the DPA VOR. Though it looks simple at first glance, the issue with this approach is that with the VOR behind you, the closer you get to the airport, the less precise is the accuracy of following the OBS needle on your VOR instrument. This occurs because the distance between VOR radials increases with distance from the VOR.

Overall, I know that getting the instrument rating was made easier by my flight simulation experience, and by the chance to practice instrument approaches at home at my convenience. While the personal computer flight simulation time could not be logged as part of my training, it was quite valuable.

Moreover, it’s still valuable because instrument-rated pilots must maintain proficiency by meeting instrument practice requirements every six months. Accordingly, I practice whole ATC flights and related approaches with flight simulation before making real flights. I mentioned in a previous installment of this series that I found it quite valuable to work through the instrument lessons in FS2000. With FS 2002 now released, I’ll look forward to practicing with the new ATC feature, as well as more realistic aircraft, scenery and weather.

Finally, I wondered during the process of getting my private pilot certificate and instrument rating if my interest in flight simulation would decrease. It hasn’t and I’m now even more interested in seeing with flight simulation “how real it can get!”



Horton's Hints

FS2002 Tips & Tricks – Part 1

Starting with this issue, Doug Horton begins a series of helpful hints for Microsoft Flight Simulator 2002. Some hints will be basic and some will be more advanced. Take your pick. My objective is to share what I've learned in operating the new version. There's no particular order so simply choose what you like.

Screen Resolution

First things first, and mainly for newer users, let's look at your screen resolution. When you boot FS 2002 the first time, it starts in full screen mode at 800 x 600 resolution. As an alternative, you may wish to operate it in a window, in which case use the **Alt + Enter** key combination. This view mode will render FS 2002 at the same screen resolution that you have for your Windows desktop.

Some video cards/systems will give you much higher frame rates and smoother performance in full screen mode. In addition, if you have a monitor larger than 15 inches, it may render better 3D effects as well. So if you want a full screen resolution better than 800 x 600 what you will want to do is go to the **Options | Settings Display** menu, select the Hardware tab and set your desired resolution. You can check your framerate as you make these settings by pressing **(Shift) + (Z)** two times.



Setting your full screen resolution.

Converting Old Situation Files

Although FS 2002 will not convert situation files from FS 98, a solution is to copy them to the FS 2002\Pilots folder, open the sim, open the situation and then close the sim. This results in FS 2002 generating the appropriate *.flt and corresponding *.wx (weather) files.

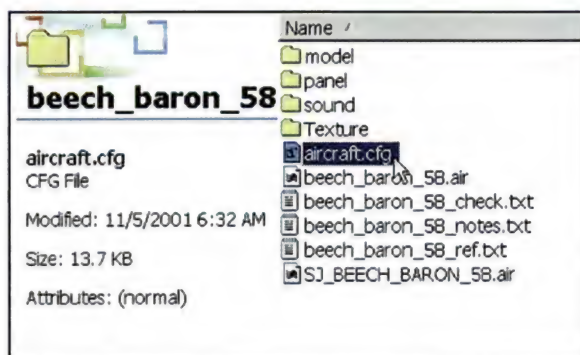
Damage Models

Although not enabled by default, there is a big surprise with a stunning damage model feature for all default aircraft. You can see the tails and wings ripped off, engines on fire and smoking, and if you dive into the water, you'll see slashing and spray, followed by an underwater explosion and bursts of spray.



New damage models are disabled by default, but they can be enabled by a simple addition to each default aircraft's aircraft.cfg file.

To enable this feature for each default aircraft, or add-on aircraft (if it was created using CFS 2/FS 2002 multi-resolution visual modeling) open its aircraft.cfg file with a text editor. The Aircraft.cfg file is found in the root folder structure for each aircraft, along with its flight dynamics (.air) file. You should be aware of this file and learn your way around because you can use this file to control many FS 2002 features and capabilities.



Many important settings and simulation features can now be controlled in each plane's Aircraft.cfg file.

To enable enhanced damage modeling, add the line:

```
visual_damage=1
```

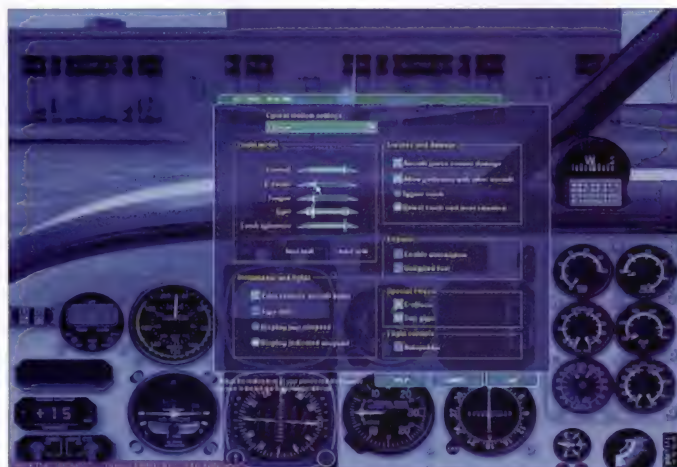
to the [fltsim.x] section(s) just above the Description line.

```
[fltsim.0]
title=Beech Baron 58
sim=SJ_BEECH_BARON_58
model=
panel=
sound=
texture=
kb_checklists=Beech_Baron_58_check
kb_reference=Beech_Baron_58_ref
atc_id=N700MS
ui_manufacturer=Beechcraft
ui_type=Baron 58
ui_variation=White with blue and gold
visual_damage=1
description=Beech Baron 58 Flight Dynamics © Steve Small FSD 11/2001 v1.0
```

To add enhanced damage modeling to any FS 2002 format aircraft, open its aircraft.cfg file with a text editor. Then, add the line "visual_damage=1" to the [fltsim.x] sections

One more important step: you must adjust overall realism settings in the simulator to **Hard**, which will automatically check "Aircraft Stress Causes Damage," or you won't see the damage effects. However, keep in mind that this level of realism will also affect other things, like P-factor, Torque and Gyro realism.

So for example, you might find it a bit harder to taxi and/or maintain level flight with *P-factor* realism at a high setting. *P-factor* simulates the relationship between power transmitted through the propeller and the rudder. With an increase in power, the inertia of the propeller will turn the aircraft to the left and raise the nose. This turning tendency is caused by *P-factor*, and can be compensated for by careful use of the rudder in proportion to the amount of power applied, and the airspeed. Ideally, an aircraft in level cruise is trimmed for hands-off flight. That's what your rudder trim is for.



You can make changes to the selections on the realism menu in **Hard** mode, resulting in a **Custom** setting. So you can maintain your crash realism while removing or reducing unwanted realism elements.

You can, however, make changes to the sliders and selections when realism is in **Hard** mode, resulting in a **Custom** setting. Therefore, you can maintain your crash realism while removing or reducing unwanted realism elements.



In order to take advantage of the enhanced damage modeling, your realism settings must be set to **Hard**

Pushback Feature

There's a new pushback feature, which you can start and stop by pressing **(Shift) + [P]**. It's steerable with the **[1]** and **[2]** keys on the main keyboard (not the keypad), but there is a slight delay after each key press. It doesn't display a moving tug with tow bar like FSAssist, but I suppose the delay in steering results from the invisible tug repositioning to cause the aircraft to turn. Hit the **(Shift) + [P]** keys again to stop the pushback. Clearly, this is a welcome addition.

Opening Doors

Use **(Shift) + [E]** keys, followed by **[1]**, **[2]**, **[3]**, etc., to open aircraft doors. Repeat the **(Shift) + [E]** combination, followed by the number keys, to the close doors.



Shift + E, plus 1 and 2, open the pilot and baggage doors on the Cessna Caravan Amphibian.

Texture Appearance

If you have a relatively fast system and video card with sufficient memory, go to the FS2002.cfg file, and under the [GRAPHICS] section, change:

“TEXTURE_MAX_LOAD=512”

to

“TEXTURE_MAX_LOAD=1024”

for better texture appearance.

```
[GRAPHICS]
FULL_SCREEN=0
PERFORMANCE_MODE=0
DEF_PERF_MODE=4
TEXT_SCROLL=1
AUTO_LOD=0
DETAIL_TEXTURE=1
WATER_EFFECTS=1
TEXTURE_QUALITY=3
EFFECTS_QUALITY=1
CLOUD_SPRITE_PERCENTAGE=0.750000
GROUND_SHADOWS=0
SMOOTH_VIEW=1
IMAGE_SMOOTHING=1
TEXTURE_MAX_LOAD=1024
COCKPIT_HIGH_LOD=1
AIRCRAFT_SHADOWS=0
LANDING_LIGHTS=1
IMAGE_QUALITY=0
TEXTURE_BLDG=1
TEXTURE_GND=1
TEXTURE_WATER=1
AIRCRAFT_TEXTURE=2
SEE_SELF=1
PROPELLER_VISIBLE=1
LOW_RES_RENDERING=0
LOD_TARGET_FPS=21
NUM_LIGHTS=3
```

If you have a relatively fast system and video card with sufficient memory, go to the FS2002.cfg file, and make a change to 1024 under the [GRAPHICS] section for better texture appearance.

Also, you may notice that all the different “sections” of your FS2002.cfg file were almost jammed together by default when the program was installed. It’s a good idea to separate these sections, which begin by a descriptive word within [] brackets, with a space or two by hitting the **[Enter]** key.

This will not affect the sim, which ignores this “white space,” but it will make it much easier for you to find things. And experience over the years has shown that you will need to be making changes and additions to this file from time to time, so you can customize the simulator to work the way you need it to.

New Virtual Cockpit View

If you don’t like the viewpoint of a virtual cockpit, it can be easily changed with keystrokes or by default in the aircraft.cfg file, in the [Views] section, where it is called “eyepoint.” You just have to play with these numbers to get the default view the way you want it. This is for *Virtual Cockpit View*, not standard *Cockpit view*.

You can change the default view inside the simulator by using the **[Shift] + [Enter]** and **[Shift] + [Bksp]** move the eyepoint up and down. **[Ctrl] + [Shift] + [Enter]** and **[Ctrl] + [Shift] + [Bksp]** move the eyepoint left and right. The keyboard **-** and **+** keys zoom the eyepoint forward and backward. You can even use the keystrokes to change the eyepoint to right seat if you like. Press the **[Spacebar]** to change back to the default eyepoint set in the aircraft.cfg file.

```
[Radios]
// Radio Type=available, standby frequency, has glide slope
Audio.1=1
Com.1=1. 1
Com.2=1. 1
Nav.1=1. 1. 1
Nav.2=1. 1. 0
Aid.1=1
Transponder.1=1
Marker.1=1

[Views]
eyepoint=-8.213, -0.8612, 2.220 //Longitudinal, Lateral, Vertical (feet)

[LIGHTS]
//Types: 1=beacon, 2=strobe, 3=navigation, 4=cockpit, 5=landing
light.0=3, -6.80, -19.29, 0.79, fx_navrad ,
light.1=3, -6.80, 19.29, 0.79, fx_navrad ,
light.2=3, -25.33, 0.00, 0.72, fx_navwhi ,
light.3=2, -6.63, -19.29, 0.79, fx_strobe ,
light.4=2, -6.63, 19.29, 0.79, fx_strobe ,
light.5=1, -24.18, 0.00, 6.17, fx_beacon ,
light.6=2, -8.00, 0.00, -1.60, fx_strobe ,
light.7=4, -8.00, 0.00, 2.70, fx_vclight,

[keyboard_response]
elevator=150, 250
aileron=150, 250
rudder=150, 250
```

If you don’t like the viewpoint of a virtual cockpit, it can be easily changed with keystrokes or by default in the aircraft.cfg file, in the [Views] section, where it is called “eyepoint.”

Pan Views

By default, the virtual cockpit can be panned with a hat switch. I highly recommend that you keep your default control preferences settings so that you can use a joystick or yoke hat switch (if you have one) to operate this. In normal view, by default, an 8-way hat switch will snap to the eight corresponding views.

If you wish to pan smoothly in normal Cockpit View, you can add the line:

“pan_in_cockpit_mode=1”

to the [CONTROLS] section of the fs2002.cfg file. This will not affect the function of the default keypad assignments (with Num Lock on), so you can press one of those keys, then let go, and your view will snap back to normal-straight ahead orientation.

Using the keystrokes **[Shift] + [Enter]** and **[Shift] + [Bksp]** keystrokes in virtual cockpit mode moves the panel up and down, while in normal cockpit mode these keys move the angle of the scenery

while the panel remains stationary – similar to the effect of moving your seat up and down. Adding the above line will not change these operations.

Slewing with Joystick or Yoke

The default slewing mode changed from forward/backward and heading, to forward/backward and sideways in the last version. I learned that a simple change could restore the heading slew. You can work through joystick slew axis dialog or find the [JOYSTICK_SLEW] section of your FS2002.cfg file and change the word “sideways” to “heading.”

For example, change:

```
AXIS_EVENT_00=AXIS_SLEW_SIDEWAYS_SET
```

to

```
AXIS_EVENT_00=AXIS_SLEW_HEADING_SET
```

Because the simulator may not have set this section up at installation, you may have to add it. If this is the case, you will need to add it yourself, right after the present [JOYSTICK_MAIN] section. Make sure you also add the AXIS_SCALE and AXIS_NULL entries, or joystick slew will not work.

```
AXIS_NULL_01=36
AXIS_EVENT_05=AXIS_RUDDER_SET
AXIS_SCALE_05=64
AXIS_NULL_05=36
AXIS_EVENT_06=AXIS_THROTTLE_SET
AXIS_SCALE_06=127
AXIS_NULL_06=1
BUTTON_DOWN_EVENT_00=FLAPS_INCR
BUTTON_DOWN_EVENT_01=FLAPS_DECR
BUTTON_DOWN_EVENT_02=ELEV_TRIM_DN
BUTTON_DOWN_REPEAT_02=1
BUTTON_DOWN_EVENT_03=ELEV_TRIM_UP
BUTTON_DOWN_REPEAT_03=1
BUTTON_DOWN_EVENT_04=BRAKES
BUTTON_DOWN_EVENT_05=GEAR_TOGGLE
BUTTON_DOWN_EVENT_06=KNEEBOARD_VIEW
BUTTON_DOWN_EVENT_08=VIEW_MODE
BUTTON_DOWN_EVENT_09=GEAR_TOGGLE
POV_MOVE_EVENT_00=PAN_VIEW
POV_MOVE_REPEAT_00=1

[JOYSTICK_SLEW]
AXIS_EVENT_00=AXIS_SLEW_HEADING_SET
AXIS_SCALE_00=64
AXIS_NULL_00=36

[KEYBOARD_MAIN]
SELECT_1=49.8
SELECT_2=50.8
SELECT_3=51.8
SELECT_4=52.8
MINUS=189.8
PLUS=187.8
ZOOM_1X=8.8
```

You can set FS 2002 to use the joystick for slew heading in the FS 2002.cfg file. The simulator may not have set this section up at installation, so you may have to add it.

Menu Visibility

By default, the main menu bar will be showing in window view, but not showing in full screen view. You can hide it in window view by changing the value of the following expression from 0 to 1 in the FS2002.cfg file. Then, whenever you need to see the menu, press either Alt key, which is how you reveal the menu in full-screen view.

Change the following:

```
HideMenuNormal=0
```

to:

```
HideMenuNormal=1
```

Autopilot Behavior

New to FS 2002 is another piece of real-world realism with respect to how the autopilot functions. In a real-world autopilot, using the altitude (ALT) function will also engage the wing leveler. In other words, they don't operate independently.

According to Mike Lambert, Microsoft's FS 2002 Aircraft Test Lead, many users have asked for a way to make the autopilot in FS 2002 enable pitch and roll modes independently, like they were in FS 2000. The default autopilot behavior in the release version is to simultaneously control pitch and bank. However, if you want your aircraft (both default and add-on) to hold altitude with the autopilot and manually fly the heading, you can edit the aircraft.cfg file for the specific airplane, and add the following lines to the [Autopilot] section:

```
use_no_default_pitch = 1
```

```
use_no_default_bank = 1
```

Add these lines for each aircraft in which you want the autopilot to behave this way. Note that if these are set to 1, the Flight Director will command zero degrees of pitch or bank for that particular axis.

```
[Reference Speeds]
flaps_up_stall_speed= 66.000
full_flaps_stall_speed= 52.800
cruise_speed= 185.733

[keyboard_response]
elevator=150.000000,250.000000
aileron=150.000000,250.000000
rudder=150.000000,250.000000

[Views]
eyepoint=-3.284843,0.000000,1.550709

[autopilot]
use_no_default_pitch = 1 // 0 = Default pitch mode, 1 = No default pitch mode
use_no_default_bank = 1 // 0 = Default wing leveler mode, 1 = No default wing leveler mode
flight_director_available=1
default_vertical_speed=700.000000
autothrottle_available=0
pitch_takeoff_ga=0.000000
autoland_available=0

[direction_indicators]
direction_indicator=0=1.0
```

Many aspects of autopilot behavior may now be controlled in the Aircraft.cfg file. You can also turn off the default Wing Leveler mode from here.



By default, the autopilot in FS 2002 will activate the Wing Leveler function automatically when you select the altitude (ALT) function.

Progressive Taxi with ATC

When you request “progressive taxi” from the ground controller, he/she should tell you to follow the purple striped line that will appear on the taxiway in front of your plane and extend all the way to the end of the runway. When you reach the end of the runway, you will have the option to contact the tower for your takeoff clearance.



If you find yourself at an unfamiliar airport in FS 2002, ATC can provide you with Progressive Taxi instructions, which will illustrate the correct taxi directions on the pavement.

Radio Operation with Mouse

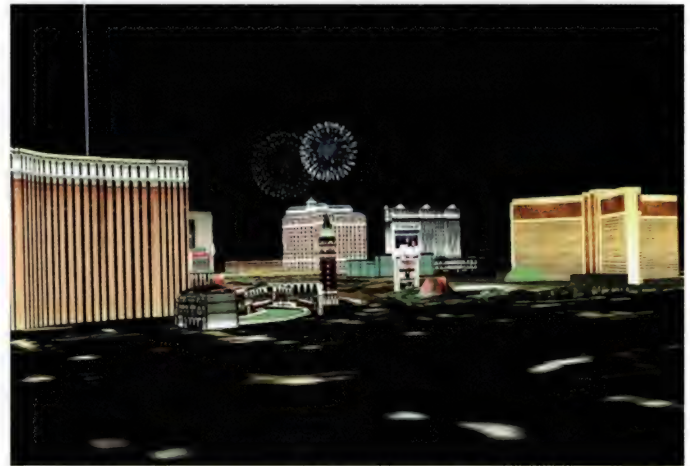
In this version, there is an alternative means of tuning radios if you have a wheel-type mouse. Simply place the mouse cursor over the whole or fractional radio frequency, then increment up or down with the mouse wheel.



New to FS 2002 is the ability to increase and decrease radio frequency selections with your mouse wheel, rather than holding down the mouse button, or using repeated mouse clicks.

A Little Eye Candy

For a real treat, check out flying around Las Vegas at night. There are fireworks every night from after 10 pm for about 20 minutes. Also, see if you can find the simulated volcano in action in front of the Mirage hotel or fountain in front of the Balaggio.



There's lots of “eye candy” in Las Vegas, including the Mirage's volcano.

Water Rudders

For the Cessna Caravan Amphibian, you can assign a different key command to the event called “Toggle Water Rudders.” The default assignment is **[Shift] + [W]**, and you may have noticed that this is not documented in the simulator's help files. With the water rudders lowered, the turning effect is much greater than with just the airplane rudder, particularly at slow speeds.

Module Version Checking

When you start FS 2002 each time, it will check versions of add-on *.dll (dynamic link library) files. If you repeatedly see a warning screen at boot up reporting an older file, and you're confident it will work with FS 2002, you can open the fs2002.cfg file, then insert a new section called “OldModules”. This is described in the FS 2002 readme file. A common example of this will be the third party FSsound.dll file that many gauge programmers used for FS 2000. You can add this entry:

```
[OLDMODULES]
```

```
FSsound.dll=1
```

Setting this value to 0 won't load the module, but will still disable the warning screen. A value of 1 will load the module, again disabling the warning screen.

Statement of Ownership, Management, and Circulation

1. Publication Title Flight Simulator World	2. Publication Number 1 5 3 0 - 5 0 0 7	3. Filing Date September 5, 2001
4. Issue Frequency Bi Monthly	5. Number of Issues Published Annually 6	6. Annual Subscription Price 39.00US/44.00CN
7. Complete Mailing Address of Known Office of Publication (Not printer) (Street, city, county, state, and ZIP+4) 5376 52nd Street SE, Grand Rapids, MI 49512-3702		Contact Person Julie Snider Telephone 616/698-0330

8. Complete Mailing Address of Headquarters or General Business Office of Publisher (Not printer)

5376 52nd Street SE, Grand Rapids, MI 49512-3702

9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor (Do not leave blank)

Publisher (Name and complete mailing address)

Arnie Lee, 5376 52nd Street SE, Grand Rapids, MI 49512-3702

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Tim Dickens, 1121 N. Annie, Olathe, KS 66061

Managing Editor (Name and complete mailing address)

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10. Owner (Do not leave blank. If the publication is owned by a corporation, give the name and address of the corporation immediately followed by the names and addresses of all stockholders owning or holding 1 percent or more of the total amount of stock. If not owned by a corporation, give the names and addresses of the individual owners. If owned by a partnership or other unincorporated firm, give its name and address as well as those of each individual owner. If the publication is published by a nonprofit organization, give its name and address.)

Full Name	Complete Mailing Address
Flight Simulator World, Inc-Through	5376 52nd Street SE
Abacus Software, Inc.	Grand Rapids MI 49512-3702
Owned by Arnold Lee	
President & CEO	

11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages, or Other Securities. If none, check box ☒ None

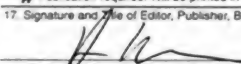
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12. Tax Status (For completion by nonprofit organizations authorized to mail at nonprofit rates) (Check one)

The purpose, function, and nonprofit status of this organization and the exempt status for federal income tax purposes:

☒ Has Not Changed During Preceding 12 Months

☐ Has Changed During Preceding 12 Months (Publisher must submit explanation of change with this statement)

13. Publication Title Flight Simulator World		14. Issue Date for Circulation Data Below September 5, 2001	
15. Extent and Nature of Circulation		Average No. Copies Each Issue During Preceding 12 Months	No. Copies of Single Issue Published Nearest to Filing Date
a. Total Number of Copies (Net press run)		9912	4400
b. Paid and/or Requested Circulation	(1) Paid/Requested Outside-County Mail Subscriptions Stated on Form 3541. (Include advertiser's proof and exchange copies)	235	229
	(2) Paid In-County Subscriptions Stated on Form 3541 (Include advertiser's proof and exchange copies)	2574	2375
	(3) Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Non-USPS Paid Distribution	3722	0
	(4) Other Classes Mailed Through the USPS	0	0
c. Total Paid and/or Requested Circulation (Sum of 15b (1), (2), (3), and (4))		6531	2604
d. Free Distribution by Mail (Samples, complimentary, and other free)	(1) Outside-County as Stated on Form 3541	0	0
	(2) In-County as Stated on Form 3541	158	50
	(3) Other Classes Mailed Through the USPS	0	0
e. Free Distribution Outside the Mail (Carriers or other means)		0	0
f. Total Free Distribution (Sum of 15d and 15e.)		158	50
g. Total Distribution (Sum of 15c and 15f)		6689	2654
h. Copies not Distributed		3223	1746
i. Total (Sum of 15g and h.)		9912	4400
j. Percent Paid and/or Requested Circulation (15c divided by 15g, times 100)		98	98
16. Publication of Statement of Ownership ☒ Publication required. Will be printed in the Dec/Jan 2002 issue of this publication. ☐ Publication not required.			
17. Signature and Title of Editor, Publisher, Business Manager, or Owner  Arnie Lee		Date 09/05/01	

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Sticks & Stuff

Sticks, throttles and pedals, oh my! Here's the latest and greatest in flight gear for the PC. While we haven't had a lot of new combat/flight simulation programs to choose from in 2001, with Microsoft Flight Simulator 2002 here now and other combat simulations on the way, the hardware manufacturers have revved up production with flight gear for every flight sim enthusiasts' needs and budget. Check it out...

CH Products Pro Throttle USB, Fighterstick USB and Pro Pedals USB combo

It sure takes them long enough, but in the end everything they have put out to date has been worth the wait. Even though it is seriously late, which describes just about everything that they have released since 1996. And the same is true of their new *USB Pro Throttle*. I'll be the first to admit that I have always enjoyed the movement of the *Thrustmaster*, *Saitek* and *Suncom* throttle devices over those of CH Products (<http://www.chproducts.com/>) in the past. But the new USB Pro Throttle has a lot to offer.



USB Pro Throttle

By Rod White

The new USB version of their Pro Throttle is a stand-alone, programmable throttle device. It shares the same movement as the previous models, as it pretty much slides straight forward and back, with no stops for idle or afterburner like some of the competition's products offer. Therefore, right off the bat I honestly don't like that they stuck with the same movement. But I should also add that there's really nothing at all wrong with how this or their previous throttles work either. It's actually strictly a matter of preference.

As a device the USB Pro Throttle is meant to work in conjunction with your existing joystick, but it works best with another CH Products USB device, like their new *USB Fighterstick* and the updated *USB Combatstick 568*. For this review, we used the new CH USB Fighterstick and a set of CH USB Pro Pedals.

Installation was straightforward. As is the case with most USB devices, you need to install the software first, then the hardware. The *Control Manager* software is unique in how it works.

Not only does this software interface handle the programming and assigning of various buttons, hat switches and functions, but it also ties all of the devices together to work as a *single virtual device* in your Windows Control Panel/Gaming Options applet. Most new titles can take advantage of multiple USB gaming device IDs, but

Fighterstick USB



older titles like *Falcon 4.0*, and *European Air War* were developed with access to only a single device ID in the Gaming Options applet. I for one am very thankful that CH figured out how to fool Windows and older software titles into seeing these devices as a single device.

The USB Pro Throttle features a whopping three 4-way hat switches, one 8-way hat switch, three buttons, a mini-joystick and a 3-way mode selector. This gives you a combined 69 programmable functions throttle alone! Add the USB

with the Fighterstick for an additional four hat switches, three buttons and a trigger. Then add the USB Pro Pedals and you not only have pedal support, but support for toe-brakes as well.

All of this can be programmed with the Control Manager software. The 3-way mode selector allows you to switch between three sets of commands, in-flight no less. The mini joystick is also a fantastic addition to the throttle, because you can not only set it up to fly, instead of using another stick, but it can also double as a mouse-device by setting it up that way in the Control Manager interface.

In use, it's an outstanding system. I've logged many hours now in a variety of flight simulation titles with this combo. Everything was pretty much smooth sailing with this gear. The only major issue encountered was with *Enemy Engaged* and the rudder pedals, but I think it is a software related issue. *Enemy Engaged* requires a beta patch to work properly with most USB gear.

My only real gripe is that you need to load a virtual device profile every time you reboot Windows before you can use this gear setup as a single device. So it would be nice if

The programmable capabilities are almost endless with the USB Pro Throttle and the feel and durability of this gear is topnotch.

there was a way to configure it and/or Windows to use the Control Manager configuration as a single virtual device when Windows starts.

Price-wise this whole system doesn't come cheap. Each component retails for about \$149 each, but if you check out *Flight Sim Central* you can get them for much less. But wherever you go the whole setup will be over \$300, so you are definitely flying first cabin here. But if you want a complete USB stick, throttle and rudder setup, you will be hard pressed to find a better value anywhere else. Actually, right now no manufacturer that I'm aware of offers all three in the form of USB devices. Nor does anyone offer the means to set up all three as a single virtual device either, which really gives CH gear an edge over everything that the competition has to offer.

There is competition on the horizon, with some lower cost two-piece USB options. However, none of them offer stand-alone USB rudder pedals. I should also add that the USB Pro Throttle could be used in conjunction with any of CH Products' USB yokes too. The programmable capabilities are almost endless with the USB Pro Throttle and the feel and durability of this gear is topnotch. CH Products has always made gear that lasts, as my aging *CH Force FX* and other CH gameport devices are still working like a charm!



Saitek X-45 Digital Joystick/Throttle combo

The analog X-36 stick and throttle combo from Saitek was a huge hit with flight/combat simulation enthusiasts when it first debuted. The follow up was last year's *X-36 Digital/USB* combo, which took the same stick and throttle and added digital precision and USB support. Now Saitek's latest offering is the *X-45 Digital*, which is essentially yet another update to the X-36 hardware.

Saitek X-45 Digital Joystick/Throttle combo

It is a particularly good value for the simulation enthusiast looking for a reasonably priced system, with everything in a single box for less than \$100.

First, the gameport interface is gone, as the X-45 is a USB-only device combo. At a glance, this new combo looks very familiar, but it is different at the same time. The physical characteristics of the stick and throttle are almost identical to those employed by the X-36. But the bases are now redone with blue metallic plates, and outlines of what each button, dial or switch does is there as well.

The rest of the combo is detailed in orange and silver, which sounds like a freaky combo. To be quite honest, it does look a little funky, but in truth it doesn't look as bad as it sounds. The pinky-finger switch is a little different, but works nicely. The flip up switch cover, which used to function with both the cover up or down, now only functions with the cover up, and represents a pretty poor design choice if you ask me. If something works, why mess it up? Therefore, the only way to use that button now is to flip the switch up out of the way, but before you could push on the cover or button itself to engage it.

That one flaw aside, the functions are identical. The stick has five buttons, two 8-way hat switches, and the pinky-switch with removable hook that leaves it like a notch as it was before on the X-36. On the throttle you get two buttons, a single 4-way hat switch, two rotary dial controls, the mouse controller (that doubles as an 8-way hat switch), the spring-loaded rudder rocker switch, and an arc-style throttle control with detents for idle and afterburner settings. This is identical to the X-36 throttle functionally.

Cyborg 3D Force



In use, the combo works great, as expected. It feels and works just like the X-36 hardware before it. The software is an updated version of the SGE software interface, representing a slight update over what the X-36 had to offer, and is easy to use.

The X-36, even by today's standards, is still a very nice stick and throttle combo. So, it's not a bad thing that the X-45 is just an upgrade. With outstanding rudder support

in the form of that rocker device, that's spring-loaded right where the fingers of your left hand wrap around the throttle, its programmable functionality, and a sweet arc-style throttle with detents, the X-45 is an outstanding choice.

It is a particularly good value for the simulation enthusiast looking for a reasonably priced system, with everything in a single box for less than \$100. You can actually buy the X-45 for around \$80-\$85, depending on where you shop.

Saitek Cyborg 3D Force

That's right; Saitek (<http://saitek.com/>) has finally stepped up to the plate now with a force-feedback stick! The *Cyborg 3D Force* is their latest stick, and it employs Immersion force-feedback technology.

Like previous *Cyborg* sticks, this one is designed with both left and right-handed enthusiasts in mind. The left or right hand can manipulate the throttle lever by design and the stick equally comfortable for left or right-handed enthusiasts. The feel of the stick is great too, as it is not too easy to push, and not so stiff that it's work to move it.

This new stick features four thumb buttons, four base buttons, a trigger, an 8-way Hat Switch, dual-lever throttles, and rudder support via twisting the handle. Saitek likes to call this *3D Twist*. The 3D Force is strictly a USB device, so installation is a breeze.

Once installed you can check out some of the force-feedback effects under the Game Device applet in Control Panel to make sure everything is working.

I should also add that the new Immersion technology employed by this stick produces 10 different forces simultaneously to boot. Additionally, there's a power supply to accommodate that is of the Wall-Mart, large block of a power supply that usually takes up two slots on a power strip variety. So if there's anything negative to report, that's it. But it's a minor gripe overall once you realize what 3D Force has to offer for the money.

The force-feedback effects work well, but overall they are not as defined as those produced by the *Sidewinder Force Feedback 2*. Then again, this stick doesn't cost as much either. The attractiveness of the 3D Force is that it sells for about \$60 retail, which means on the street you may find one as low as \$50. At that price it's well worth it, because most

This is another great stick from Saitek, one worth checking it if you want to add a little shake, rattle and roll to your flight simulation and PC gaming play time.

sticks with the same functions as this one sell for at least that much, without force feedback support. And I'm not saying that there's anything wrong with the force feedback effects of the 3D Force. They're just not as strong as those higher-end offerings produced by Microsoft or Logitech, both of which run about \$100 and \$80 respectively.

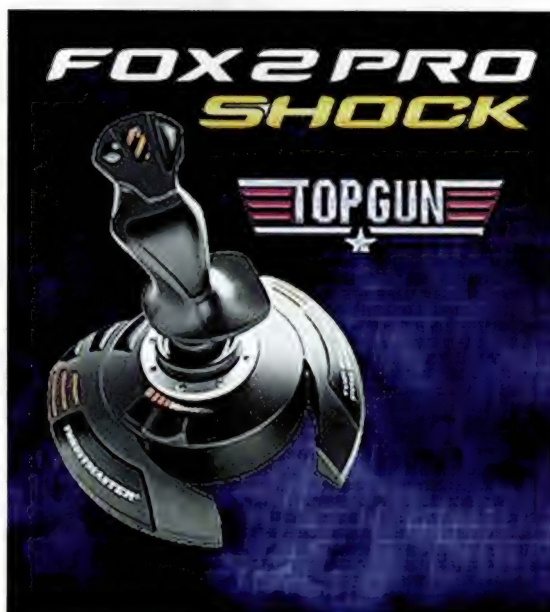
In the looks department, this stick is easily a winner, as the blue backlight illuminates the Saitek logo on the base, and there are two more blue lights to be found at the top and bottom of the hat-switch. When moving the stick forward and back they illuminate. Sure it's more of a gee whiz factor, but add the lights with the traditional Cybernetic-looking design of the 3D Force and you got one very impressive looking stick

A stick priced at just \$60 that offers a solid stick design, throttle and rudder support, a good number of buttons to manipulate, and can accommodate both left and right-handed users comfortably is certainly a bargain. In addition, you get decent force-feedback support. Can't complain about that, at all. This is another great stick from Saitek, one worth checking it if you want to add a little shake, rattle and roll to your flight simulation and PC gaming play time.

Thrustmaster Top Gun Fox 2 Pro Shock

Thrustmaster (<http://us.thrustmaster.com/>) is still around making flight gear for the PC, and while we eagerly await the arrival of the ultra-high-end HOTAS Cougar system from them, here's a look at one of the latest sticks from their Top Gun line of products. The Fox 2 Pro Shock is essentially the Fox 2 Pro that they have been selling for well over a year now, but they added a motor to produce Direct X force-feedback effects via vibrations.

The Fox 2 Pro Shock runs about \$35 on the street, and at that price it's a very nice all-in-one solution. ...it's sort of cool for what it is, and for the money it's a great right-handed stick that pretty much fits like a glove due to the nice contoured grip design.



In all you get a nice stick, designed to accommodate right-handed enthusiasts, with six buttons, a trigger, an 8way hat-switch, throttle slider, twist-action rudder support, and a weighted base. The handle also has adjustable resistance via a dial on the bottom. While the stick works as advertised, you really must think of it as a "Shock" stick/controller, like a Sony Playstation Dual Shock gamepad for the PC, rather than a true force-feedback joystick.

Thrustmaster was also very careful not to call it a force-feedback stick as well, and for good reason. It doesn't produce the kind of effects that a force-feedback joystick can.

Instead, you do get vibrating cues that something is going on, which is cool as well, but not quite the same as a true force-feedback controller. Nonetheless, there's no power supply to accommodate like most force-feedback devices require, which is a big plus.

The Fox 2 Pro Shock runs about \$35 on the street, and at that price it's a very nice all-in-one solution. So, think of the vibration effects as a bonus, because this is definitely not a force-feedback joystick. But I must admit it's sort of cool for what it is, and for the money it's a great right-handed stick that pretty much fits like a glove due to the nice contoured grip design. It may not put you on the "Highway to the Danger Zone", but I got a notion that it will add a little more excitement to your next encounter with a MiG when you decide to sit down to take part in some simulation sorties on the PC.



Chips Anyone?

A Look At The Latest CPU Chips

By Rod White

There are really just two competitors worthy of mention in the realm of CPUs right now, and they are *Intel* and *AMD*. Until recently an Intel Pentium IV based system wasn't as affordable as a similarly clocked AMD-based rig. This was due largely in part to the fact that Pentium IV systems required RDRAM, which is still more expensive than DDR or PC133 SDRAM modules. Also, the Pentium IV CPU pricing was considerably higher than that of AMD. Things have changed a little, as Intel has released the *i845* chipset, which allows system builders and OEMs to put together Pentium IV -based systems with SDRAM now.

While RDRAM is more expensive, it should be noted that it's still a wickedly fast solution when you consider that it offers a peak memory bandwidth of 3.2GB/s (Gigabytes per second), which still positions it as the leader in memory bandwidth. SDRAM comes in at around 1.06GB/s, and DDR SDRAM at 2.1GB/s. It is also a fact that the Pentium IV is a memory bandwidth hungry processor, which utilizes all of what RDRAM has to offer.

So, why in the world would you want to pair the Pentium IV with SDRAM? Cost would be the first answer. SDRAM is still slightly cheaper than DDR memory, and is about half the cost of RDRAM. In addition, most new *i845* motherboards are priced less than previous Pentium IV solutions that require RDRAM. More recently Intel has started trying to compete more with AMD on price, but Pentium IV processors are still a little more expensive than a similarly clocked (or shall I say marketed) AMD chips. However, it's nice to see Intel at least trying to close the gap a little more.

The *i845* memory controller also brings many new features to the table that makes it the most efficient SDRAM memory

controller currently available. Since it needed to make do with SDRAM this is no surprise, as they really had to squeeze every drop of bandwidth out of it that they could. Moreover, a Pentium IV /SDRAM system is much more price competitive. Therefore, from a marketing standpoint, it is now a very attractive upgrade for businesses and home users, since it is certainly much faster than their present Pentium III system.

Another change for the Pentium IV is the new Socket 478 pin configuration. Previous Pentium IV CPUs were of the older Socket 423 variety, but the newer Pentium IV processors, like the 2 GHz and 1.9 GHz models, only come as Socket 478 parts. So, if you are going for a Pentium IV system now you are well advised to make sure you are getting the new pin configuration. There are still *i845* motherboards available for the old socket configuration, so make sure you know what you are getting.

A Pentium IV Supersystem

We've been experimenting with a 1.9 GHz Pentium IV with the new socket configuration, using components that are certainly not the most expensive around, but are all excellent performers. We wanted to build a machine that represented what we felt was an affordable, yet great performing solution based around the *i845* chipset and Pentium IV with SDRAM. The system consists of:

- MSI 845 Pro 2 R motherboard
- 256 MB of PC 133 SDRAM
- Dual 20GB IBM 60GXP 7200 RPM drives (supplied by Coolerguys.com) in a RAID 0 performance configuration

(the motherboard has an on-board *Promise RAID* controller).

- ATI Radeon 7500 64MB DDR video card.
- Pentium IV approved 350Watt power supply with a Global Win WBW76 Socket-478 heatsink/fan combo, also from *Coolerguys.com*.
- All aluminum *Lian Li PC60* case from *Coolerguys.com*.

The case is almost identical to the *Wahoo Computers* case reviewed last issue, minus all the special modifications, but with the addition of four USB slots up front. It definitely is not the most affordable case that money can buy, but for cooling purposes and looks it just can't be beat. The all-aluminum design disperses heat much better. It has many case fans inside, plus a removable filter up front. And it has a fantastic look that fits right in with the whole flight-sim genre, with a slick brushed metal exterior.

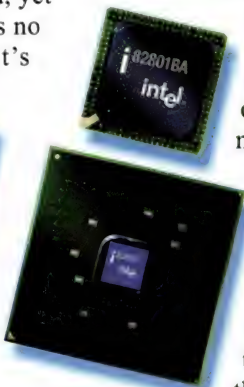
However, it's not just an expensive and attractive case, but it's also extremely functional. The design of this case makes adding and removing components a breeze. The USB slots are right up front, concealed behind a little flip-down panel. This gives you easy access for plugging in and swapping out USB devices, like new USB flight gear, scanners, digital cameras, printers, you name it.

The MSI motherboard offers onboard audio via *C-Media's CMI8738* audio controller, which offers up to 6-channel audio support! I'll be the first to admit that I've never been a fan of on-board audio. Surprisingly, this on-board audio can actually get you by and save you the cost of a separate audio card, yet it still gives you decent audio for 2, 4, or 6 speakers. It's no Philips Acoustic Edge 5.1, but for free on-board it's an option that you can easily get by with.

PC-2-PC USB networking capability is also built into this motherboard. So it's not only a big cost saver for the Pentium IV/SDRAM based system, but it's a full-featured motherboard at that!

In use, we found that this Pentium IV 1.9 GHz system with SDRAM is very fast and very capable for gaming, flight simulation, and every day use. There is no doubt that it's a bit slower than an i850 motherboard and RDRAM, but the cost saving is dramatic. This will allow you to spend more money on quality components.

GlobalWIN



Also, consider that if you're running an SDRAM system already with PC133 SDRAM, you can use the system memory and many other components from your current setup. Simply pick up an MSI 845 Pro 2 R motherboard, a Socket-478 Pentium IV CPU, and maybe an extra hard drive to benefit from the RAID 0 performance boost. Put it all together into one of these Lian Li PC60 cases from *Coolerguys.com* and you have a nice system that will stay cool and looks like a million bucks too!

A similarly configured machine from Dell with a Pentium IV 1.8 GHz processor, with the addition of a keyboard, mouse, 48X CD-ROM drive, Windows Me, 56k modem, cheapo speakers, and a single 40 GB hard drive runs about \$1,300 + shipping and tax. What we configured here in parts alone comes to about \$1,100, with the added performance benefit of the RAID 0 array consisting of dual 20 GB high performance and a far superior video card. The integrated sound option on the Dell machine is also just a SoundBlaster 16 "compatible," while with our configuration you get 2, 4, or 6-channel support, and greatly superior sound quality.

In all fairness, Dell gives you an *almost* similarly configured machine, with the added value of a software package. Dell tosses in *Norton Anti Virus 2002* and some other applications, in addition to *Windows Me* and a coupon for the *Windows XP* upgrade. But you can pick and choose better performance components doing it the way we did, in the end making this a much better performer for your simulation/gaming and home productivity needs. Not to mention you could easily shave off \$100 from our \$1,100 price tag if you opted to go with the *Antec SX635* case with 350-watt power supply that we reviewed last issue over the Lian Li case.

Therefore, in the end, yes you may spend the same money compared to a Dell or other comparable Pentium IV/i845/SDRAM system after you add a CD-ROM drive, mouse, keyboard, operating system and monitor. However, you'll have spent that money on higher quality components which make your machine a much better performer overall.

Bottom Line on the Pentium IV

While it's a fact that the Pentium IV thrives on more memory bandwidth than SDRAM can offer, this new configuration also gives end users the chance to get a very powerful system, without the added cost of RDRAM and more expensive motherboards that support it. Not to mention that RDRAM must be installed in pairs, thus adding to the overall cost. However, with this system we were able to add a single 256MB DIMM of *Crucial's* PC133 SDRAM and we were up and running on the MSI 845 Pro 2 R, with empty slots to spare for future memory upgrades when needed.

The next step for the Pentium IV is the DDR memory platform. While currently there are a few motherboards out there that give the P-IV the benefit of DDR memory support, they aren't Intel "approved" solutions. Actually, Intel is in the middle of legal proceedings to try and put a stop to these motherboards that are out there now. Intel plans to unveil their own DDR memory motherboard chipset in early 2002. This will be something to watch for, because if they can work the kind of magic that they did with plain PC133 SDRAM and the i845, then the DDR memory paired with the raw power of the Pentium IV should be something to behold.



The new enhancements to the core include *3DNow! Professional Technology*, which adds 52 new commands to the existing 3DNow! instruction set, compared to that of the previous Thunderbird processors. The level 2 (L2) cache remains the same, at 256k. The number of transistors increases from 37-million to 37.5 million, and a thermal diode is also part of the processor now. All this will require motherboards that support the new technology.

The Athlon XP processors are of the Socket-A variety, so most recently released motherboards will support them with nothing more than a BIOS update. Other motherboards will require replacement altogether. Recently *VIA* released the *KT266A* revision to their DDR motherboard chipset, which helps to give the Athlon XP and previous AMD Socket-A processors an additional performance boost as well. So

combine an Athlon XP processor with a motherboard like the *EpoX 8KHA+*, or other *KT266A* motherboards, and you have a very solid performance solution.



We've been running an Athlon XP 1900+ for a while now, and I must admit this is one very fine machine! If you're in the market for an AMD-based system, it's foolish

to even consider an older Thunderbird processor for the long haul. Granted there are some outstanding deals to be had on the 1.4 GHz T-Birds now, at around \$100-\$110 for the processor alone. But the Athlon XP 1500 running at 1.33 GHz offers all of the benefits of the new Palomino core, and early comparisons show that it's on par with the 1.4 GHz Thunderbird in terms of performance. Granted you're talking about a price difference of about \$40 between it and a 1.4 GHz T-Bird, but its money well spent if you're building a new system from the ground up.

Bottom line on the Athlon XP

The Athlon XP 1900+ is currently (at press time) selling for around \$265 online, which is just a few dollars less than a Pentium IV 1.9 GHz at \$277. So with the introduction of the Athlon XP we start to see the gap closing in prices between AMD and Intel. This is definitely as high end as it gets for processors from AMD for now.

Not only are they closing the gap in price, but by the look of things, they're doing it in performance too.

AMD's Athlon XP Processors

The latest from AMD is the *Athlon XP* line of processors. I should also start out by stating the fact that AMD has done away with branding their CPUs with a speed rating stamped on them. The new Athlon XP line is based on the *Palomino* core, which includes many new features and enhancements.

Their current flagship processor is now the Athlon XP 1900+. So, what they're trying to say to the world is that this is the equivalent of a 1.9 GHz+ CPU from the competition. It's no secret that AMD's last round of Thunderbird processors outperformed most Intel counterparts rated at the same or higher clock speed. The 1.4GHz Thunderbird is known to offer a level of performance that's almost right up there with the 1.7GHz Pentium IV. However, because most people still play the numbers game at retail, they associate the better performing CPU/system via the one with the larger number in MHz/GHz for the processor. Today you just can't judge processors only on rated clock speeds.

AMD is also insisting that system vendors not mention the clock speed of the Athlon XP CPUs, but to call them *Quantispeed Technology* enhanced processors with their proper names. This is a pretty wise move on AMD's part, because it may help to finally position AMD-based Athlon XP systems on a more level playing field with what Intel has to offer at retail.

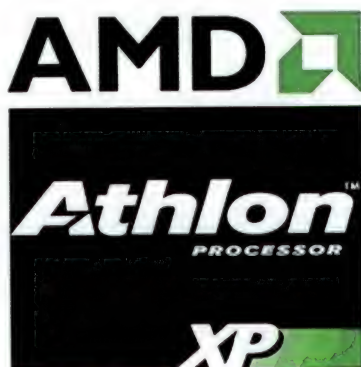
Note that while most end-users will think that the "XP" in *Athlon XP* stands for *Windows XP* support, AMD claims that "XP" stands for *Xtreme Performance*. However, it's obvious that naming their new processors with the modifier *XP* behind them at around the same time as the launch of Windows XP was more than coincidental.



VIA Apollo KT266A

We are seeing comparisons where the Athlon XP 1800+ with DDR memory outperforms a Pentium IV 2 GHz platform with RDRAM in some instances.

In use, this system equipped with a GeForce 3 video card from Leadtek, 256 MB of DDR memory, a 40GB IBM 60GXP hard drive and a KT266A chipset motherboard is well worth building if you're looking for the ultimate performance



SSE2 Instructions

With the new SSE2 instructions an application programmer has much more flexibility, as the instructions allow SIMD computations to be performed on both floating-point and integer data types and on the packed integer data types in the MMX registers

To explain the *QuantiSpeed* Architecture in-depth here's AMD's explanation of it from their white paper on the topic.

1. Nine-issue, superscalar, fully pipelined micro-architecture

At the heart of *QuantiSpeed* Architecture is a nine-issue, superscalar, fully pipelined core. This provides more pathways to feed application instructions into the execution engines of the core, simply allowing the processor to complete more work in a given clock cycle (high IPC). The delicate balance between the depth of the pathways (pipelines) and operating frequency of the processor produces high levels of performance. Longer pipelines alone translate into lower IPC, but high operating frequencies. However, shorter pipelines alone result in increased IPC, but lower operating frequencies. The AMD Athlon XP processor is designed to maintain a balanced approach between pipeline depth and processor frequency to provide extraordinary levels of overall processor performance.

2. Superscalar, fully pipelined Floating Point Unit (FPU)

QuantiSpeed Architecture features a superscalar, fully pipelined FPU, which completes more floating point operations per clock cycle than competitive x86 processors and permits high operating frequencies. The end result is the most powerful x86 FPU available today. The AMD Athlon XP processor has ample computing power to tackle the most computation-intensive software applications.

3. Hardware data prefetch

Prefetching instructions from system memory to the processor's Level 1 Instruction Cache is a common technique used to increase the processor's work throughput (IPC) and therefore overall performance. This feature of *QuantiSpeed* Architecture prefetches data from system memory to the processor's Level 1 Data Cache, which reduces the time it takes to feed the processor critical data, increasing work throughput. As a result, application performance is automatically enhanced when using the AMD Athlon XP processor with *QuantiSpeed* Architecture.

4. Exclusive and speculative Translation Look-aside Buffers (TLBs)

The TLB structures in *QuantiSpeed* Architecture keep the maps to critical data close to the processor. This is designed to prevent the processor from stalling or waiting when future data is requested. These TLB structures are now larger, exclusive between caches, and speculative. Larger TLBs give the AMD Athlon XP processor access to additional data maps. The exclusive nature of these structures removes the duplication of information, freeing up more space in the Level 2 cache for other useful data to be used by the processor. The aspect of speculation allows the AMD Athlon XP processor to generate future maps of critical data quickly. These three enhancements to the TLB structures further increase the work completed per clock cycle, thus improving real-world application performance of the AMD Athlon XP processor.

solution for the money. Moreover, with Flight Simulator 2002 with us now, you will certainly be able to take complete advantage of all that this system has to offer if you want to see stellar performance with all the graphics options turned up.

Conclusion

Make no mistake about it, there's definitely some truth to the new performance rating system AMD is now using with the introduction of the Athlon XP. But having seen a Pentium IV 1.9 GHz in action too, one must admit that you really can't go wrong with either manufacturer's product. In the end, when it comes to bang for the buck, AMD is still coming out the victor in the price vs. performance battle. But with the price gaps starting to close, and DDR memory motherboards right around the corner for the Pentium IV, that could all change very soon.

I should also add that in applications that take advantage of the SSE2 instructions, (Streaming SIMD Extensions 2) the

Pentium IV is almost unbeatable in performance. While the Athlon XP does finally include support for SSE instructions, it still doesn't include support for SSE2, which is currently exclusive to the Pentium IV. No matter how you look at it, both are performance monsters, and both are outstanding processors to build a system upon, particularly since the cost of these CPUs are now only separated by about \$10 now on the street.

Read more about many of these components at their websites:

Intel
(<http://intel.com/>)

AMD
(<http://www.amd.com/us-en/>)

Coolerguys.com
(<http://coolerguys.com/>)

Wahoo Computers
<http://wahoocomputers.com/index1.htm>

Sound Advice

PC sound hardware is advancing at a much slower pace than 3D-accelerator technology. But there's still a lot of cool new hardware out there that audiophiles can install in their PCs. Actually, looking back at the year thus far, companies like *Philips* and *Klipsch* firmly made their presence heard with some outstanding PC audio products, and continue to do so.

Philips has made such a big splash this year that many have quit caring about just what *Creative Labs* may be up to. And indeed Creative has been up to something, because they recently announced the *Audigy*, which is their next generation sound processor. The Audigy will power a variety of different sound cards, at a variety of different price points, replacing all of their current products with new versions.

The specs from Creative sound promising, but I'm not sold on it yet. The fact remains that you don't need a *SoundBlaster* card in your machine like you did in the DOS age when upgrading your system capability to the SoundBlaster was the only way to go. I may be convinced otherwise once I see the Audigy in action, up close and personal. But one thing is for certain, the competition currently has the upper hand, and their products looks formidable.

The Latest Philips Soundcards

Boy was I ever surprised when I received these two latest soundcards from Philips (www.philips.com/products/). They are the *Seismic Edge 5.1* and *Rhythmic Edge Surround*, which are actually new versions of the same cards that they released earlier in the year.

Originally, the *Rhythmic Edge 3D Stereo* was a basic 2-channel output soundcard, which for the price was a nice card that did some neat stuff in the way of 3D sound, making it better than most standard sound cards. This new *Rhythmic Edge Surround* is a 4-channel soundcard, supporting full-blown 4-channel sound. At the core now is the *Thunderbird Avenger DSP* (Digital Signal Processor), the same DSP that powers their highest-end card, the *Acoustic Edge 5.1*.

You should know that 5.1-channel sound isn't just for watching DVDs on your PC, because with any of these 5.1

We ran the card through a wide variety of our most demanding flight/combat simulation titles, and it sounded fantastic with either a 2 or 4-speaker system. So I'd highly recommend it for the budget minded 4-channel soundcard shopper.



The new *Seismic Edge 5.1* now offers 5.1 output over the previous 4-channel output. Like the *Rhythmic Edge Surround*, it also employs the *Thunderbird Avenger DSP*, instead of the previous *Thunderbird Q3D*. This means that both the *Rhythmic Edge Surround* and *Seismic Edge 5.1* now offer more 3D sound streams (96 vs. 64), more DirectSound streams (256 vs. 128), and better gaming (EAX 2.0 vs. EAX 1.0) compatibility. The *Seismic* now

benefits from the addition of S/PDIF digital output that supports streaming of stereo PCM, AC3 (Dolby Digital) and DTS to digital speakers and decoders.

Both cards can now benefit from software like *QSurround*

Virtual 5.1, to allow DVD Playback with virtual surround over two speakers. Both cards can also convert external stereo sources to 4-channel *Rhythmic* or 5.1-channel *Seismic* surround sound. There's a few more improvements and features to list, but I think I covered the most important ones in detail.

In use the *Seismic Edge 5.1* sounded great, and performed like a champ in

everything that we threw at it. So without question, the *Seismic Edge 5.1* is the perfect solution for the flight simulation enthusiast looking for 5.1 sounds, without paying for all of the extra bells and whistles that they don't want or need.

The new *Seismic Edge 5.1* runs only about \$59-\$69 depending on where you shop, which makes it one of the least expensive 5.1 channel solutions on the market today.

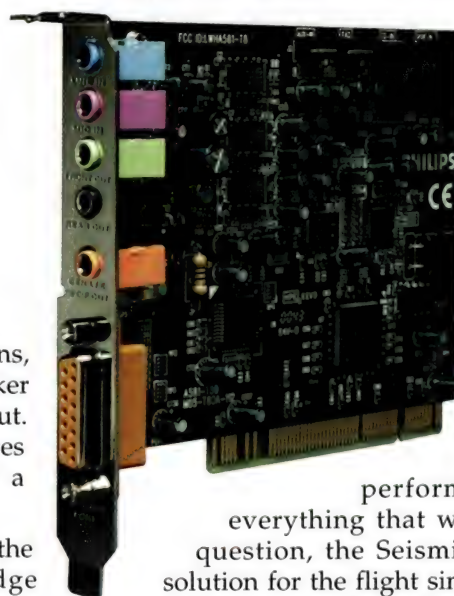
Actually there's no difference in performance between the *Seismic Edge 5.1* and the *Acoustic Edge 5.1*. But the *Acoustic Edge 5.1* does offer some different connection options like S/PDIF in and out. The *Acoustic Edge 5.1* also ships with a copy of *PowerDVD* with 5.1 Dolby Digital and several other features. So the *Acoustic Edge 5.1* is still the better high-end solution, with all the bells and whistles, but the *Seismic Edge 5.1* is clearly the more affordable option.

Just be sure to keep an eye on the writing on the boxes to make sure you're getting the newer version of the card



solutions you can output your PC games, simulations, MP3s, and any other sound source through a 5.1 speaker system. Even if the source isn't encoded for 5.1 output. Everything sounds great that way, and further enhances the simulation/ gaming experience compared to a standard 4-channel solution.

It gets even better; because the *Rhythmic Edge Surround* is still priced the same as it was when it was just a 2-channel card! So for \$39.99-\$49.99 on the street this is truly one of the best bargains currently out there for PC enthusiasts looking for a 4-channel solution.



that you want, because it's a little confusing for the consumer since the packaging for the first and current model Philips soundcards look almost identical in color and design.

Labtec Pulse 424 Speakers

Usually any speaker system in the \$50 price range raises a red flag. Based on previous experience; for \$50 what can you really expect in terms of sound quality and performance? But we were pleasantly surprised by this inexpensive system from Labtec (www.labtec.com/).

The Pulse 424 is a 2.1 system, as it features two satellites and a sub-woofer. The satellites put out six watts each, which don't sound like much on paper. Although the highs were nice and clear, the system was lacking a little in the midrange area. But with a \$50 system we were not expecting *Klipsch* performance. Bottom line is the Pulse 424 *exceeded* our expectations with respect to sound quality.

The sub-woofer puts out 20 watts, and is incased in a wooden enclosure with an eight-inch passive radiator driving the bass. The bass was rich, and the sub-woofer was far more powerful than we had ever dreamed it would be. All in all, this system performed exceptionally well in PC simulations, games, MP3s, music CDs, and even DVD movies.

The satellites don't take up much space at all, and the sub-woofer is smaller than most. So finding an optimal spot for the system shouldn't be too much trouble. Labtec was also kind enough to include all of the controls and a headphone jack on one of the satellites, while the sub-woofer has its own volume control. Another plus is the fact that the bulky power supply itself is housed in the sub-woofer, so it won't take up two spots on your power strip.

While this system definitely won't rock the house like most \$100+ systems can, it's without question the best speaker system we've ever tested that can be had for less than \$100. And since this is just a \$50 speaker system, that says a lot.

Klipsch ProMedia 5.1 Speakers

It's hard to imagine anyone "one upping" Klipsch, other than Klipsch themselves (www.klipsch.com/). And they gone ahead and did just that! The ProMedia 5.1 system is a true six-channel 5.1 system, rated at a whopping 500 Watts total power (5 x 60 Watts for the satellites and 200 Watts for the sub-woofers).

The system consists of 4 two-way satellites, 1 two-way center channel and dual 8" subwoofer drivers. The overall design of the ProMedia 5.1 system takes the outstanding technology employed by the previous ProMedia 4.1 system, tweaks it, adds a center channel, and kicks up the power. Put that all together and you have what may very well be the best speaker system on the face of the Earth for PC audio and simulation/gaming enthusiasts! One thing is for certain; it's definitely one of the most powerful.



The satellite/center channel speakers now employ exclusive Klipsch *MicroTractrix* horn tweeters that cleanly and accurately handle the high frequencies. Also, gone from the design are the controls embedded in one of the front satellites. Now a stand-alone control tower is included, which features separate main, center, rear and subwoofer volume controls.

The tower also features a digital LED volume level display, an output on/off toggle for headphone listening, and two stereo mini-plug jacks. One of the mini-jacks is for headphone output, the other for connection of any other alternative sound source that uses a stereo mini-plug output. Additionally, this set of speakers ships with 18-gauge-speakerwire, which goes to show how serious they are about sound quality.

We fired up this new set of speakers in conjunction with a Philips Acoustic Edge 5.1 soundcard, and immediately we were absolutely wowed by what we heard. You haven't flown a PC flight/combat simulation like this before; trust me. Since the soundcard can also pump out non-5.1 sources through all 5.1-channels, titles like *FS-2000*, *Combat Flight Simulator 2*, *MechWarrior IV*, *Max Payne*, and *Janes USAF* sound like a completely new game when running through this setup.

There is so much power here that there's more than enough to spare. So it's definitely not the kind of speaker system that you want if you have a hard time going easy on the volume knob, particularly if you have very close neighbors who would rather not hear the engines of an F-16 kicking into full burn at 3AM.

I'm very pleased with all of the improvements and added features that the ProMedia 5.1 speaker system has to offer over the previous 4.1 model. The separate control pod is something I had always wished they had included. It's a feature that I found very useful on the *Midiland S2 4100* speaker system that I used to run.

It looks like *Klipsch* has delivered yet another high-end, top-notch speaker system for PC audiophiles and gaming/simulation enthusiasts alike. At \$399 they're not going to fit into everyone's budget, but believe me, they're worth every penny.

New 3D Video Cards

By Rod White

The 3D video card market is dynamically changing. 3Dfx is down and out now after nVidia gobbled them up earlier in 2001. And although nVidia (www.nvidia.com/) is currently leading the pack strongly with their GeForce 3 and GeForce 2 MX-400-based solutions, ATI is back.

The new Radeon 8500 and 7500 were just released by ATI. The Radeon 8500 is looking like a worthy opponent for nVidia's GeForce 3. Many of the same features offered by the GeForce 3 are included in the Radeon 8500 core, like the programmable shaders and bump mapping. There are even claims that ATI's improved anti-aliasing effects do a better job at manipulating the imagery than the Quincunx method employed by the GeForce 3. We were not able to get a Radeon 8500 in time for this issue, but check back next issue for more on it.

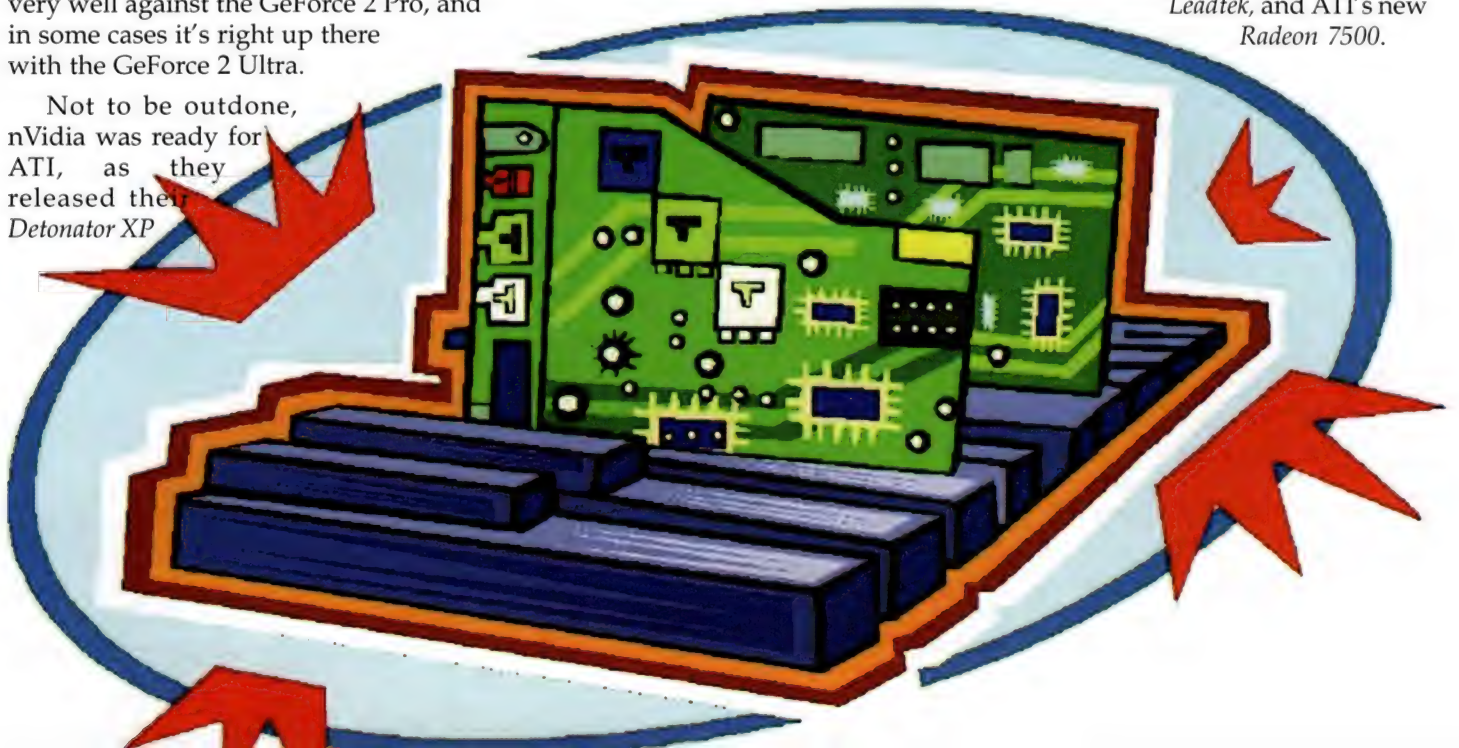
The Radeon 7500 is ATI's contribution to the mid-range performance market. We have found that it holds its own very well against the GeForce 2 Pro, and in some cases it's right up there with the GeForce 2 Ultra.

Not to be outdone, nVidia was ready for ATI, as they released their Detonator XP

reference display drivers at the same time. These new drivers gave most users a 5%-30% performance boost with their GeForce 3 and GeForce 2-based video cards. On the lower end of the spectrum, reports indicate about a 5%-10% increase in performance for GeForce 2 MX/-200/-400 users. Best of all they're a free download from nVidia's website!

The story doesn't end there though, as nVidia also released their Titanium line of GeForce 3 cards in late October. They are designated the Ti 500 and Ti 200, which are essentially GeForce 3 cards, clocked higher in the case of the Ti 500, or lower like the Ti 200. This essentially positions the original GeForce 3 somewhere between the two performance wise, and with the Ti 500 on the street now the price of GeForce 3 cards should be dropping, which is good for everyone.

In this issue we will be looking at a couple of different GeForce 3 cards, a unique GeForce 2 MX-400 solution from Leadtek, and ATI's new Radeon 7500.



Visiontek: GeForce 3

While most people may not know it, *Visiontek* (<http://visiontek.com/>) has been around making video cards for years now, but not for the retail market until recently. They were first out the door with a GeForce 3 card, which by now would usually make it an older, or less desirable offering. But oddly enough that's not the case with this product.

At a glance it's a fairly run of the mill GeForce 3 card, as they stuck to the 200 MHz core, 460 MHz memory clock, and 350 MHz RAMDAC reference design. What's really unusual is that there are no games bundled with it. But that is what makes it such a great deal! You typically have to pay extra for all the games, bells and whistles manufacturers toss in with the card, which the customer could usually do without. So aside from an attractive black and purple box with bubbles all over it, all you get is a card, manual and driver/installation CD.

Don't let the reference specs fool you; this is also fantastic performing GeForce 3 card. Many high-end gaming system vendors use this card in their performance gaming system configurations (like *Alienware PC Systems*). And as a little bonus there is also a TV-out via the S-Video connector that is included.

We ran it through our usual gauntlet of titles like *Combat Flight Simulator 2*, *Jane's USAF*, *Falcon 4.0*, *Max Payne*, *Flight Simulator 2002*, *NASCAR Racing 4*, *Mechwarrior IV* and *Enemy Engaged: Comanche vs. Hokum*. The image quality of this card is fantastic, as one would expect from a GeForce 3 card. You have the ability to turn on Quincunx FSAA at 1024 x 768 32-bit color 4 and still achieve outstanding frame rates in titles like *Combat Flight Simulator 2*, the newly released shooter extravaganza *Max Payne*, and *NASCAR Racing*.

The Visiontek: GeForce 3 is definitely a nice no frills card that gets the job done. Talking strictly performance, this card is right up there with the rest of the GeForce 3 cards that conform to the reference design, which pretty much covers all but a few of the cards on the market today. Although they skimp in the area of offering an overclocking utility to push the card a little, we found that it works fine with *PowerStrip*, and runs pretty stable when giving it a little more juice via the core and memory clock timings.

While most manufacturers are worried about offering the best and most unique game bundle, Visiontek has put out the solid performing, basic GeForce 3 card that most users looking for. Nothing more, and nothing less. While it may not be the fastest GeForce 3 solution compared to others that have pushed the reference design a little further, it definitely won't cost you as much.

At \$300, or possibly less by the time you read this, this card should be one hot seller this holiday season! With a price tag that low, combined with the new Detonator XP reference drivers (which will be a free download away from nVidia's website soon) this is a good choice if you are looking for a bargain.

Leadtek: WinFast GeForce 3 TDH

Leadtek is back again with yet another GeForce 3 card! At launch they released the GeForce 3 TD, which featured 64 MB of 4 ns DDR memory, and a DVI output in addition to the VGA output. So the GeForce 3 TD was equipped with slightly faster memory than what the competition had to offer at the time, and support for LCD Flat Panel monitors and TV-out. So what's up with this TDH version then?

The TDH is essentially the GeForce 3 TD with the addition of *H*, which stands for *hardware monitor*. The hardware monitor offers three LEDs on the board itself, which alerts you to the status of AGP 4X operation, power getting to the card, and errors. When combined with the *WinFox* software provided, you can easily monitor many aspects of card operation, like temperatures, voltage, fan speed, and more.

The TDH is also equipped with 3.8 ns DDR memory, which is slightly faster than the 4 ns memory that the TD features. Plus the TV-out support that this card offers gives users the means to display to a TV at 1024 x 768 screen resolution, compared to the 800 x 600 offered by the TD. The card also has adequate memory heatsinks and an active cooling fan.

In terms of specs it features the standard 200 MHz core & 350 MHz RAMDAC GeForce 3 reference specs, but they do ship the memory clock at 466 MHz. As a performer this card is rock-solid, and it ran everything that we threw at it without breaking a sweat. It also ran pretty stable when using the provided *Speed Runner* overclocking utility to squeeze even more performance out of it by boosting the core and memory clock timing. Image quality, as expected was on par with any of the other GeForce 3 cards that we've looked at, which means the image quality nothing less than spectacular.

To sweeten the deal they also toss in a full version of the DirectX 8.0 title *Dronz*, which is one of the few DX8 titles out there now. It can help to show off what the GeForce 3 can really do. It also comes with a full version of *Gunlok*.

It's very hard to come up with anything negative to say about this card.

It delivers what it promises, and offers a few more bells and whistles than most of the competition. Now the question is, can you benefit from the DVI and hardware monitoring functionality? Personally I can dig the hardware monitor, as it's nice to know if I'm running too hot when clocking the card a little too fast. I'm a gadget guy at heart, so hardware extras like the monitoring suite is something that I'd make good use of too.

As for the DVI output, not everyone needs it, but with the prices of LCD Flat Panel displays continually falling, maybe it will be an option worth pursuing sooner or later. If that were the case you'd be prepared with this card to take the plunge. At around \$320 - \$330 it's priced right for

what it offers. If you shop around, \$320 is an incredible value for a card like the GeForce 3 TDH.

Leadtek: WinFast GeForce 2 SH MAX

Here's another unique card from Leadtek (www.leadtek.com). The GeForce 2 SH MAX is their GeForce 2 MX-400 GPU-based offering. It features 64 MB of SDRAM and runs at the reference specs with a 200 MHz core, 166 MHz memory clock and a 350 MHz RADMAC. Like their GeForce 3 TDH, this card also features the same great hardware monitoring capabilities, and a nice heatsink/fan active cooling feature. So pushing the card a bit won't hurt it.

As a performer the GeForce 2 SH MAX outperforms the average GeForce 2 MX and MX-200 based offerings out there. In use we found that for around \$90 - \$110 this is a fantastic budget priced card. It ran everything we had to throw at very well. Sure you're not going to get nowhere near the muscle of the GeForce 2 Ultra or GeForce 3, but for around a \$100 you get pretty close to GeForce 2 GTS performance. While no games are included, Leadtek does include the *WinDVD*, *Cult3D*, *Colorific* and *WinFox/Speed Runner* utilities.

Of all of the GeForce 2 MX-400 solutions we've seen so far, the Winfast GeForce 2 SH MAX has to be one of the most impressive of the bunch. And I like the addition of the hardware monitor. For the money you get most of the benefits of the GeForce 2 GTS core, like hardware T&L (Transformation & Lighting), anti-aliasing, and NSR (nVidia Shading Rasterizer). In the realm of budget-price cards, this is currently a top pick.

ATI Radeon 7500

While ATI (www.ati.com) hasn't had a lot new in the way of graphics cards since the debut of the All-In-Wonder Radeon, they're finally back in the groove with the Radeon 7500 and 8500 cards. The Radeon 8500 is the current top of the line 3D card from ATI, which pledges to topple the *GeForce 3*.

The 7500 is a beefed up version of the Radeon 64MB DDR, and runs on a 290 MHz core, and at a 460 MHz memory clock. Its outfitted with 64MB of DDR memory, and in use it's about 40%-60% faster than the previous

Radeon 64 MB DDR, due in part to the fact that the 7500 is built using a smaller die.

Dual monitor support is in place, for either a monitor and a TV, or a monitor and Digital Flat Panel display. TV-out delivers up to 1024 x 768 screen resolution. The only thing missing is support for the advanced DirectX X8+ features, but it runs all DirectX titles just fine. But you will miss some off the advanced eye candy that a GeForce 3 or Radeon 8500 will deliver. On the other hand the 7500 and 8500 both share topnotch video playback capabilities. Watching DVDs on this card is a sight to behold, and even the first generation Radeon before it had this over nVidia.



As a performer we found that the Radeon 7500 falls in place somewhere in the mid-range. It's a little faster than a GeForce 2 Pro, almost as fast as a GeForce 2 Ultra, and is definitely faster than any GeForce 2 MX-based solution out there. Image quality is another strong point for the Radeon line of cards, and the Radeon 7500 in 32-bit color is a marvel to behold.

At around \$159 - \$180 on the street it's a card worth looking into if you're in the market for a great mid-range performer that offers outstanding dual-monitor support. It has dual 350 MHz RAMDACs, for up to 2048 X 1536 resolution per monitor to boot! The package comes with Hydra-Vision software to manage both monitors, and the dual monitor support is ideal for *Flight Simulator 2002*. ATI's own software DVD player is also included. The card has stunning image quality, outstanding DVD playback implementation, and rock solid performance.

While ATI hasn't been the best with getting updated drivers out as frequently as *nVidia* in the past, I anticipate that they will be improving in that area. With that said, there's nothing negative to say at all about the Radeon 7500.



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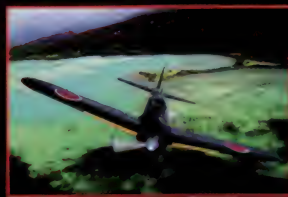
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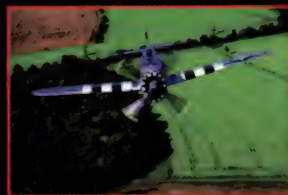
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F6F "HELLCAT"



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SBD "DAUNTLESS"



P-51 "MUSTANG"



FG-1D "CORSAIR"



P-63 "KINGCOBRA"



POLIKARPOV I-153

Holiday Gift Guide

So, what do you get the flight simulation enthusiast who seems to have everything? Well, there's a lot of cool stuff out there worth mentioning this holiday season. And of course, all this information might be useful for a certain somebody to make out his or her own wish list. Therefore, here we go...

Samsung SyncMaster 900IFT

The 19-inch SyncMaster 900IFT from Samsung (<http://samsung.com/>) is an outstanding monitor. Priced at around \$350, it offers a crisp .24-dot horizontal pitch. The diagonal pitch is .20, which is the one they try to pitch more (no pun intended). It offers both VGA and RGB connectors on the back, and a nice stow-away control panel. The panel slides down into place by simply pushing it up to unlock it, and pushing it back up inside to neatly stow it away.



It also features a healthy 18-inches of viewable screen, and offers the means to go as high as 1600 x 1200 screen resolution. Of course, a 21-inch monitor would have been nicer, but for the price, it would be silly to opt for anything bigger. A great 19-inch monitor like this one offers a good amount of viewable screen, excellent image clarity, and outstanding performance.

In use, it's a fantastic monitor, with a superb clear picture that produces vibrant and stunning color reproduction at any

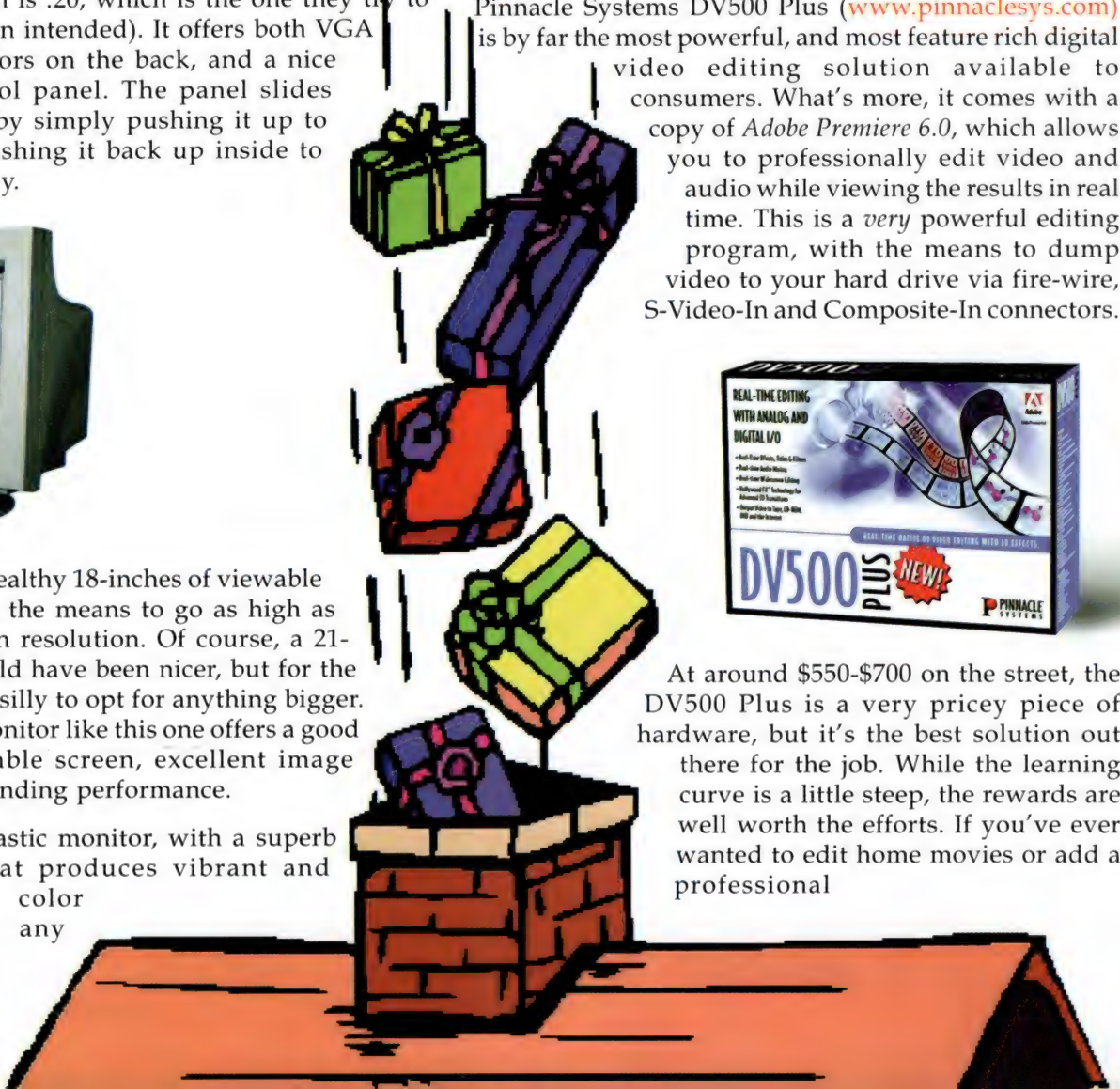
resolution. You could easily spend more elsewhere and end up with a much less capable monitor.

Pinnacle Systems DV500 Plus

Pinnacle Systems DV500 Plus (www.pinnaclesys.com) is by far the most powerful, and most feature rich digital video editing solution available to consumers. What's more, it comes with a copy of Adobe Premiere 6.0, which allows you to professionally edit video and audio while viewing the results in real time. This is a *very* powerful editing program, with the means to dump video to your hard drive via fire-wire, S-Video-In and Composite-In connectors.



At around \$550-\$700 on the street, the DV500 Plus is a very pricey piece of hardware, but it's the best solution out there for the job. While the learning curve is a little steep, the rewards are well worth the efforts. If you've ever wanted to edit home movies or add a professional



touch of class to any video project, this is the ultimate hardware/software bundle for the job.

Also, keep in mind that a copy of Adobe Premiere 6.0 alone can run as much as \$600, so this bundled deal is a real bargain! This is the kind of gift that keeps on giving once you see what this thing can do firsthand with your home movies and video projects.

Ultimate PC DVD System

Many PC enthusiasts enjoy watching DVDs on their PC, so here's our nomination for the ultimate PC DVD System package:

For sound we went with a *Phillips Acoustic Edge 5.1* soundcard, which gives us full-blown 5.1 sound output, EAX 2.0, A3D, and DirectSound/DirectSound 3D support. It also features S/PDIF in and out, which allows you to output digitally to a home-theater audio receiver. All for this for around \$79 suggested retail price.

We paired the soundcard up with the brand new *Klipsch ProMedia 5.1* sound system (www.klipsch.com/), which are also THX approved by LucasFilm. This is a pricey speaker system, but at \$350, you will be hard pressed to find a better setup for less.

Of course, you'll need a DVD drive. We opted for the *MagicDVD* drive from *I/O Magic* (www.iomagic.com/), which plays DVDs at 16x, and reads CD-ROMs at 40x. Suggested retail price for the MagicDVD is \$79.99. You will also require a video card that supports DVD playback, but most new cards today do.

If you don't have a video card that supports DVD playback, you will want an excellent performer for DVD playback, and you need look no further than ATI's *Radeon 7500* (www.ati.com/). Not only is it a great 3D-accelerator, but it also offers the highest quality video performance out there today for DVD playback. It also features TV out support, so that you can output the signal to a big screen, or larger than your monitor TV. The Radeon 7500 sells for around \$159 - \$180

All that's left is
Cyberlink's

picking up a copy of
PowerDVD 3.0 DVD
player software
(www.gocyberlink.com),
which retails for
\$49.50 and you're set
for some serious movie
magic!



Microsoft Natural Keyboard Pro

While the keyboard is one of the last pieces of hardware that you will ever consider upgrading, the new *Natural Keyboard Pro* from MS (www.microsoft.com/catalog/) makes it well worth pursuing the option.

It can be used as a standard PS/2 keyboard, with all of the features and functionality of the previous Natural keyboards from MS, but with much larger arrow keys, making it a better option for gaming.



When using the USB connector, you can enable all of the extra programmable hot keys along the top of the keyboard. These give you controls for volume, Internet browser functions, email, my computer, calculator, sleep mode and a variety of other functions. All of these can be reprogrammed to perform whatever tasks you desire.

The keyboard itself gives you two extra USB ports, so it takes up a single USB slot, but gives you back two in return on the rear of the keyboard. As far as I'm concerned, there is no better stand-alone split-keyboard on the market today. Typical street price is \$55.00.

Mouse Bungee

There's nothing more frustrating than continually having to rearrange your mouse cord while gaming, browsing the web or while just trying to get some work done. The *Mouse Bungee* (www.Mousebungee.com) eliminates this headache, and once you've used one you'll find that it's truly worth its weight in gold.

It's a very simple design, and it does a great job of managing your mouse cord and keeps it from snagging, getting caught, or from dropping back behind your desk. The translucent Mouse Bungee for \$15 is the way to go if you're cramped for space. Not only do they work like a charm, but also they look cool as ice to boot.

Another product that they offer is called the *Crystal Pro*. It integrates the Mouse Bungee device with an outstanding custom mouse pad, which features a glass mousing surface, with two different surfaces to work with. Suggested retail price is just \$29.95! My only gripe is that it takes some



space to accommodate it. However, if you have a decent sized desktop it's worth checking out.

Flexible Keyboards

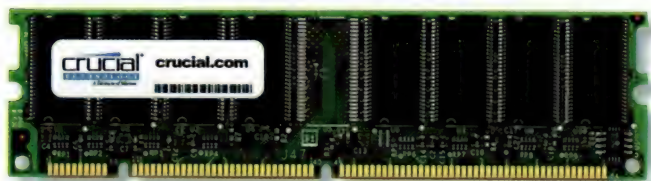
Yes, you read that right. I said flexible keyboards. This is the ideal solution for laptop users tired of using the tiny keyboard built into their laptop. Moreover, it's equally as useful for the kid's computer where drinks, chips and other foreign objects tend to be displaced among the spaces between keys on average keyboards on a regular basis.

Not only can you easily roll them up, bend them and crimp them up enough to stuff them into your pocket, but they are also moisture resistant too. You can spill an entire 2-liter bottle of Pepsi on one, rinse it off in the sink, then dab it dry, plug it back in and get right back to work or play.

They come in black, silver, and white, and pink for the ladies or little girls. Best of all it will only set you back \$29.99 for one, and we've put one through weeks worth of abuse and it's still working like a charm. Check them out over at Coolerguys.com (www.Coolerguys.com).

Crucial.com 256MB PC133 or PC2100 DIMM

Yeah, I know...give somebody RAM for a gift? Memory prices are at an all time low. In fact, prices are so low that it's silly not to have at least 256MB or more of memory installed in any PC.



At press time, we found a 256MB DIMM of DDR PC2100 for \$29.69, and a 256MB DIMM of PC133 for just \$27.89. Both come with free FedEx 2nd day shipping from Crucial.com (www.crucial.com/).

Stocking up on the megabytes is never a bad move because *Windows Me*, *Windows 2000* and now *Windows XP* are tremendous memory hogs. The more breathing room your applications and games will have to work with, the better performance you will see. You can never go wrong with adding more memory, because it's not unheard of today for some applications to utilize even more than 256MB.

Philips CD-RW Drive

Philips (www.philips.com/products/) really made a big splash in 2001 with various sound card and speaker products, but they're also big in the monitor and optical drive market too. Their latest CD-RW drive may not be the fastest drive on the block, as *Plextor's* 24X drive holds that crown for now. However, it's one of the coolest looking and nicest performing 20x CDR, 10x CD-RW and 40x CD-ROM drives on the market today.

It comes bundled with a copy of *Nero 5*, its own buffer under-run technology called *Seamless Link*, and *Thermo Balanced Writing* technology that checks the media and chooses the optimal writing speed for it. You are much less likely to waste CD-R media when burning discs with this drive. Plus the front face plate with gold highlights makes it the best-looking CD-RW on the market to boot!

You just can't go wrong with this drive, and it even comes with an installation video on CD for those of you who are squeamish about getting inside your to perform upgrades! At it's a CD-RW drive that's looking into.



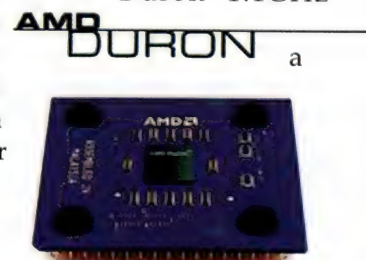
PC
around \$179
well worth

MagicWriter CD-RW drive

If the Philips CD-RW is a little out of your price range, we also highly recommend the *MagicWriter* 16X10X40X CD-RW drive from I/O Magic. It also comes with the award winning *Nero 5*, and in use, it burns CD-R and CD-RW media at a blazing fast 16X and 10X speeds respectively. It's priced to sell at around \$130-\$150, depending on where you shop.

AMD Duron 1GHz CPU

While AMD's Duron line of processors (www.amd.com/us-en/) don't quite have the muscle that its Thunderbird or Athlon XP brethren have to offer, they still present a tremendous "bang for the buck". At far less than \$70, the Duron 1GHz and the new Duron 1.1GHz are outstanding processors to consider if you're looking for cheap, yet effective and powerful upgrade from an older Pentium II or slower Celeron based platform.



With the Duron at the 1 GHz mark now, it's not only one of the most affordable processors options on the market, but one of the most powerful in the budget processor category as well. Add a quality Socket-A motherboard, and for under \$200 you're cruising at 1 GHz or faster!

Afreedy & I/O Magic 56X CD-ROM Drives

Both I/O Magic and Afreedy (www.afreedy.com/afreedy.html) offer great 56X CD-Rom drives. Many I/O Magic products can be found on the shelves at major retailers nationwide at around \$45-\$60. The same is true of Afreedy, but I've even seen Afreedy drives at local Computer shows at bargain basement prices. You can buy an Afreedy drive any day of the week for between \$35-\$40. That makes them one of the best-kept secrets in CD-ROM drives, because like I/O Magic's drives, the Afreedy drives are reliable and speedy too.

Another little known fact is that many I/O Magic drives are Acer drives, as they own that company, along with many other brand name computer peripheral manufacturers. Therefore, if you're looking to upgrade from an older CD-ROM, the 56X CD-ROM drives from both companies are well worth pursuing.

Evergreen Technologies Rumble FX Headphones

I'll be the first to admit that I'm not a headphone-sim enthusiast. I know some people who swear that you just can't hear a game or a simulation as well without headphones, because there are certain things that sound so much better with them, like 3D-positional sound in some titles.

The Rumble FX headphones (from Evergreen Technologies www.rumblefx.com/) come with a 13-foot cord, and an in-line volume control with a three-position switch that has options for off, level I and level II for controlling the force-feedback effect modes. I also like that the cord coming from the headphones comes from just the left cup, instead of two separate wires from each side that come together like a Y, which is how most headphones are designed. The single wire design makes for less messy wiring to deal with. In terms of comfort, the cups are well padded and in use they were very comfortable to use for long periods.

Firing guns in *Falcon 4.0*, kicking the afterburner in, and special effect sounds in general are a pretty unique experience with the Rumble FX headphones. I could even feel the gear hitting the ground as I landed in most flight simulations!

The headphones run on a pair of AAA batteries (included), and while the connection is of the mini-plug variety, they also include a larger ¼ adapter so you can plug them into a home stereo system. In terms of plain everyday listening quality for music or movies, without the effects turned on, the headphones are definitely better than the average \$20-\$30 headphones found on the shelves at Wal-Mart.

But consider that the Rumble FX is priced at \$59.99 suggested retail, and you can find them for about \$39.99 if you shop around. In the end you're paying for the capability to rumble, in addition to the listening sound quality of them when the effects are turned off.

Having said that, if you're looking for the absolute best quality headphones for listening, your money could be better spent on an equally priced set of conventional set. That's not at all to say that the Rumble FX isn't an excellent set of headphones, because they are. They're just not in the same class as other \$60-\$70 headphones for basic listening purposes, but for flying, shooting and blowing things up they can't be beat!

Evergreen Technologies Rumble FX Power Amplifier

Evergreen also offers the Rumble FX Power Amplifier, which can be used with or without the Rumble FX headphones. With the headphones the Power Amplifier really does help to further enhance the experience. As a standalone, it also offers options such as adding 3D sound to non-3D sound sources via SRS WOW technology. Additionally SRS TruBass can also be used to add more pep to your bass.

With FOCUS technology, the amp helps to compensate for oddball speaker placement by reshaping the 3D sound field, instead of having to move the speakers. This technology was originally created for the car-stereo market. Therefore, the unit is essentially a middleman between your PC soundcard and speakers/headphones.



The amp also allows you to use it with any sound source that uses RCA jacks or mini-plug connectors, so you can

also give it a whirl with most console gaming systems, walkmans, VCRs, DVD players, etc.

The unit itself is shaped very much like a small portable CD player, and is made of translucent blue plastic, giving it a very iMac look. My only gripe is that it one of those big power supplies (included), that can take up two spots on most power strip/surge protectors.

In short, it works as advertised, and for what it is, it's a fantastic product. I also like the fact that it features a headphone jack in addition to the in and out mini-plug and RCA jacks. So, if your current speaker system doesn't offer one, this unit will bring one closer to you, saving you from having to reach behind your PC to plug headphones in.

On the street the Rumble FX Amplifier can be had for around \$59.99 if you shop around. This is a little pricey, especially considering you can get a brand new soundcard for that much with its own 3D-sound capabilities and more, as in the case of the *Seismic Edge 5.1* from Philips (www.philips.com/products/). Then again, if you have a soundcard that you're happy with, and feel like trying something different, this is definitely the product worth looking into.

Logitech Cordless Freedom Optical

This latest desktop package from Logitech (<http://logitech.com/>) combines precision Optical technology with cordless mobility. The Cordless Freedom Optical consists of their new cordless keyboard and new cordless optical mouse.

The keyboard incorporates their new Zero-Degree Tilt design, which keeps the keyboard almost level with the desk. This maximizes the ability to type, while reducing wrist extension. Also found on the keyboard are a plethora of extra hot-keys, buttons, even wheels. All are programmable for everything from a \$ sign key for finance and online banking, to raising and lowering the volume of your speakers. A nice padded palm rest is also part of the design.



There are actually two Internet-Zones found on the keyboard, one on each side, with a number of different programmable buttons that are pre-programmed for various tasks. The Multimedia-Zone positioned in the top center of the keyboard even features a dial for adjusting the system volume, and controls for Media Player or whatever you use for playing MP3 and media files in Windows. The iNav button/wheel on the left lower side of the keyboard gives you the means to scroll, edit and even switch between tasks and applications, plus much more. Essentially, it's like a mouse-wheel that does more, as it has eight different modes of operation!

Radio Digital technology drives the keyboard and mouse, so line of sight with the receiver is not required. As long as they are within six feet of the receiver, it works like a charm! Best of all, the optical technology employed by the mouse is 800DPI resolution, which is twice as fast as refresh rates of most of the competition's optical mouse devices.

I'm also glad to see that an issue I had with previous cordless gear has been addressed in this new package. The previous cordless desktops from Logitech had a tendency to eat up batteries at a fair alarming rate. The new Cordless Freedom Optical has a suspend key to help reduce this, plus the battery consumption has been reduced considerably. They now claim that the keyboard has a 6-12 month lifespan on a single set of batteries and that the mouse can run for 2-3 months on a single set of batteries. That's a major reduction compared to what previous models consumed.

Not only is this functionally an outstanding combo, but it looks like a million bucks too, because this duo is done up in black with silver accents. At around \$85-\$90 on the street it's a bargain for such a full function keyboard with an optical mouse.

Philips Brilliance 150P2e LCD monitor

While I was previously unimpressed with LCD flat panel displays in general, it was mostly due to cost. Today they've come down in price considerably, and we've recently found that the Philips Brilliance 150P2e is one worth checking out if you're in the market.

The super slim cabinet of the 150P2e allows for a small footprint, even with the power supply embedded in the monitor body. The means to tilt, swivel and to adjust height functions, coupled with a wide viewing angle panel make it a very configurable design. With the means to connect to a standard VGA output video card, there's no need for a card with a DVI-out connector. But if you have a card that is so equipped, this monitor can

handle it too with the adapter that is provided, which accommodates both standards.

The advanced Auto Setup button makes it a breeze to get up and running quickly. As far as image quality goes, the 1024 X 768 max resolution, with a .30 dot pitch looked crisp and vibrant in everything that we threw at it. It managed to produce a great picture even at lower resolutions.

I should mention that because LCDs do things very differently, a .30 dot pitch for an LCD is quite good but it wouldn't be so hot on a standard CRT monitor. And while most 15" LCDs don't go as high in resolution as a good CRT 17" inch monitor, the max resolution of this LCD at 1024 x 768 looks better than most any 17" CRT display. Also, keep in mind that a 15" LCD monitor offers the viewable screen size of most traditional 17" CRT monitors

The base can also be swapped out for an optional multimedia base with speakers in it, and the power supply is integrated into the monitor, which is another plus. At around \$530-\$550 on the street, the Brilliance 150P2e is competitively priced with other high-end 15" LCD displays. Its super slim design, combined with outstanding image quality makes it well worth recommending to anyone looking into getting an LCD display.

ADS Technologies USB Instant DVD

This is a unique product that is so new it almost didn't make it into this gift guide. USB Instant DVD from ADS (www.adstech.com/) combines a hardware-based video capturing solution with a fantastic suite of easy to use video-editing applications. This will give you the means to convert any analog video/audio input source into MPEG-2, MPEG-1, VCD (Video CD), SVCD (Super Video CD) and DVD formats.

With USB Instant DVD, you can put your VHS home movies into a format that can be viewed in your standard DVD player, or PC DVD-ROM drive. You can even edit video and send it back to VHS. Best of all, it's a solution requiring a simple installation using USB. In other words, you won't need to open your PC case to

install any expansion cards. The breakout box connects to your PC via a single USB slot. You can even burn video direct to a CD-R or DVD-R drive with this product!

In the way of software, you get Ulead Video Studio 5.0, MyDVD 3.0, Sonic Foundry's Sound Forge XP, Sonic Foundry's Acid Style 2.0, Video Producer by Video Share, Cyberlink's Power DVD player and an updated version of Windows Media Player.

You could easily spend \$229 or more for all of that software alone, but it comes with USB Instant DVD bundled at that same price. If you're looking for an easy as can be video editing solution that gives you means to edit video, burn it direct to CR-R, CD-RW and DVD-R media, and a whole lot more, then I'd highly recommend getting USB Instant DVD.



Overclockerz Store Performance upgrades

The Overclockerz Store (<http://overclockerz.com/>) also provides a wealth of unique cooling and overclocking products, even AMD and Intel CPUs that are already multiplier unlocked and ready for overclocking. We've been playing with a 1.33MHz AMD Thunderbird CPU from them that's multiplier unlocked, and it runs very nice at 1.4 GHz and even beyond, with outstanding stability to boot. Therefore, if you're looking to overclock, you definitely need to check out some of the stuff that they have to offer.

Secondly, they offer a wide variety of OCZ-Tech products like a 256MB DIMM of their Enhanced SDRAM (PC133 DIMMs rated for 150MHz operation), and the outstanding OCZ Gladiator heatsink/fan combo (for Socket A AMD processors), which is a heavy duty copper cooling solution that runs only \$20-\$25. This makes it one of the most affordable high-end solutions around. Also, all the OCZ-Tech products that they offer are competitively priced, and in use, we've found that they're all outstanding performers just the same.



In-depth reviews of the latest software for FS 2000, Combat Flight Simulator and Combat Flight Simulator 2.

Super Cub 180

From Flight Sim Developers

Reviewed by Phil Paschutine

In the 1940s, one in three aircraft in the US was a Piper J3 or Cub. There are many still flying all over the world today, and you will find at least one in every flight club. The Piper J3 is still widely used as a trainer. To fly and land a J3 is quite an experience, just ask any J3 pilot!

I admit that until recently, the mere thought of getting inside a puny Piper Cub or J3 aircraft was enough to give me chills. I have this thing about the fabric ripping and how it's too cramped inside to breathe. However, this may be outdated thanks to two unrelated events that occurred this month.

The first was a friend of mine who took aerial photos from his dad's Super Cub. I have to confess that the photos of the inside of the aircraft revealed ample space, and the outside view was excellent, so you do not feel cramped in like you do in a glider. The second reason is the release of FSD's Super Cub 180.

I have reviewed quite a few aircraft add-ons and I cannot recall any of them having such an impact on me the way the Super Cub did. Don't get me wrong, all the aircraft reviewed by me are very good, otherwise, I would not have recommended them to you. That being said, the review could very well end here with a "hot stuff, buy"! But the best is about to be unveiled, so read on.

Installation and Documentation

For the time being, the Super Cub 180 is available by download only. There may be a CD later. Simply download the installation program and run it, keeping your Internet connection open. The secure Credit Card transaction is processed right from your hard drive, and the installation will proceed. A backup installation key is given to you, in case you ever need to reinstall the Super Cub.



The installation program should locate the path to the simulator and install its files into the proper folders. At the end of the installation process you can view the POH (Pilot's Operating Handbook) in HTML format. A printable version of the manual is available from the Tech Support page of their website.

The manual has several indexed sections, with a superb image of the yellow bird. The specs section contains accurate real life data, which should prove to be quite interesting during the test phase. The panel page contains a diagram of the panel, with descriptions. There is also a succinct history of the Super Cub. Let us not forget the direct support link with a FAQ page for the 180, and the credits section with direct email links to each of the authors. This HTML file is best viewed in 1024 x 768-screen resolution.



The instrument panel of the Super Cub 180



Ms. Chika



Front view

The Aircraft

This is not another aircraft, but is quite majestic and gracious. The Super Cub is a high wing single STOL aircraft. It is commonly fitted with giant tundra tires, skis, or even floats. The base price from Piper right now is around \$135000. A second hand 1989 Piper Super Cub will cost you \$78000 +. I saw a 1959 Super Cub on floats for \$59000. But its virtual counterpart is only \$15.

The Super Cub airframe, created by Manuel Medel, is the result of all the finest design and texturing techniques possible, and presents an awesome visual result. You can see rivets, worn paint, dirt, grease spots, oil streaks, exhaust smears, recessed wheel wells, independently rolling wheels with grooves and "Goodyear" letters on the side, leather seats, worn metal plates, visible internal ribs, and even aircraft wiring. The aircraft is fully animated, with moving flap cable guides, control cables, and working flap hinges. It's all there, *plus* one splendid addition... Ms Chika, a fully rendered 3D gal! What a change from all those hairy male faces we have been accustomed to! The little lady moves her arms and head too!

This high level of detail is found inside the aircraft as well. The Lycoming O-360 C4P or C1G 180HP engine is in also rendered in 3D, and modeled to 100% accuracy in the flight dynamics .air file. The instrument panel is very readable, even on a 15' monitor at 800 x 600 resolution. The gauges on the panel use natural backlighting, and are photoreal representations of the real thing. A fully functional virtual cockpit for FS 2002, with working gauges, is pending release at press time.

Flying the Super Cub

This is not all that complicated in theory, but proves to be challenging. The aircraft will take off in a few hundred feet, and land in about 200 to 400 ft. Therefore, the Super Cub is your logical choice for practicing short takeoffs and landings. It handles nicely in flight, but I found it hard to maneuver on the ground, probably because it is a tail dragger, and also, because of its restricted over-the-nose visibility. And this is pretty much how it is in a real-world Cub, except of course, in the real world you can just lean over the side for a better view, which you can not do in front of your computer. (This is an unavoidable drawback of virtual flying.)

The flight model, created by veteran Steve Small, is incredibly accurate. The real-world aircraft specifications outlined in the POH also apply to this virtual rendition. You are *virtually* flying the real thing!

To take off, wait for the elevator to become effective and let the airspeed build, and at some point the tail will rise and the aircraft will takeoff...almost by itself. You can also try a three-step take off: stick back, power on (then relax the backpressure), and add forward pressure as rolling

speed builds up. Do *not* raise the tail too high during takeoff. You will only achieve a negative angle of attack and drive the main gear into the ground, thus creating more friction. Until the tail lifts, the over-the-nose visibility is restricted. So, do not be tempted to apply forward pressure too soon. Let the tail lift off by itself. Landing a tail dragger is done in a three-point attitude, and that takes some practice!

Conclusion

I'm frugal when it comes to awarding any "this and that of the year" award, but if such a title existed, the FSD Super Cub 180 would get my vote as High Wing Single of the year. The package includes authentic sound files, breathtaking visuals, and near perfect handling. Fellow flight simmers; I can only urge you to buy that aircraft. It is everything you wanted and more. Moreover, an absolute bargain at \$15.00.

More Information

Publisher: Flight Sim Developers

Website: www.fsd-international.com/

SRP: \$15.00

Important note:

Phil Paschutine is an independent reviewer. Tim Dickens, Managing Editor for *Flight Simulator World* created the instrument panel for the FSD Super Cub.



Notice all the little details right down to the canvas stitches



Virtual cockpit view - the yoke even works in FS 2000.



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FS Scenery Enhancer

Scenery Enhancement Tool for Microsoft Flight Simulator from Lago

By Phil Paschutine

Many of us who've been around flight simulation for a while remember A & SD for FS 4. This was the first and only WYSIWYG scenery editor Microsoft provided for Flight Simulator. The Graphic User Interface was a breeze to use, and a lot of flight simmers enjoyed enhancing the few existing areas or building new ones from scratch. Since that time, Microsoft has not considered that an internal scenery designer would be of any interest.

Although many have been disappointed with this omission, Microsoft actually did us a big favor. Inquisitive minds went to work and created airport and general scenery design tools, 3D object designers, and compilers. Without these programs flight Simulator would be just another "game", and people would get bored with it after a while, eventually putting it on the shelf.

I guess the boys at LAGO have been hard at work, as they have just released the first FS 2002 dedicated "drag 'n drop" scenery editor. Like A&SD, FS Scenery Enhancer works from inside Flight Simulator, so there are no source files to edit and compile. I can picture some of you raising an interrogative eyebrow. Yes, you heard right, no source, no code, no compiling. The only work that is required of you is using the keyboard!

Installation and Documentation

For the time being, FS Scenery Enhancer is available by download only and on a try-before-you-buy basis. A boxed version will be available some time in the future. During the installation process you will be asked for a code. If you do not have it, the software will install itself, but will have limited function. Because of these shareware limitations, you cannot test and see the full potential of FS Scenery Enhancer. Therefore, I suggest that you get that registration code right away.

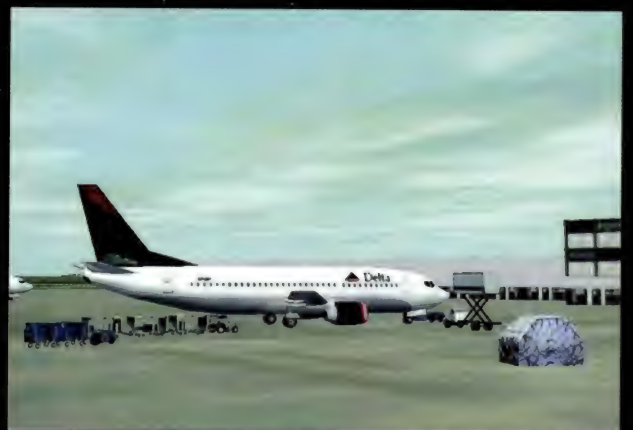
The 27-page manual, in PDF format, is very complete. As usual, the documentation is not meant for the reviewer only, so I suggest you read it. Although the use of the editor is straightforward, the manual contains many tips and tricks. However, if you are in a hurry you can just read the quick start section. It will give you all the key commands you need to get started.



Airport Support Vehicles



Busy, busy



A definite busy area

only, and commercial designers cannot use it. You also cannot distribute your enhancements to non-owners of FS Scenery Enhancer.

Enhancing the Scenery

I recommend using Top Down view when inserting 3D objects. Ground polygons are best created using standard cockpit view. I added several VOR antennae, buildings, chimneys, factories, airplanes, visibility meters, and trees. The effect on frame rates was negligible.

Be careful on how you align the asphalt polygons, as they overlap on the runway if you come too close. I found that, in general, creating airport aprons and taxiway is not very practical with this tool. I recommend sticking to inserting 3D objects with this tool.

FS 2002 has AI (Artificial Intelligence) aircraft. The AI aircraft should be able to avoid any objects that are on their direct path. The default AI aircraft do not recognize the Lago objects, and will go through them. I personally did not find that to be a *big* problem, but it would certainly be better if the default AI would not see fit to taxi right through your new FBO. Lago explains that built in crash avoidance would affect the frame rate. This explanation is a bit curious.

File Sharing

You can enjoy your enhancements alone or share with others. If you click on "FS Scenery Enhancer Scenery Exchange" you will be brought to the LAGO file-sharing page, where you can upload or download FS 2002 scenery enhanced files. There is a naming convention you must follow in order to make it easy for everyone. The FS Scenery Enhancer files have an open architecture; this means that you can modify an existing third party file.

Conclusion

Lago's FS scenery Enhancer is not an add-on for commercial scenery designers. It is perhaps disappointing that flight simmers cannot share their scenery enhancements with non-FS Scenery Enhancer owners. It is, however, a must have for flight simmers wanting to enhance their own desolated airport area by popping various well designed objects into the scenery like the pros, but without any code. In that perspective, Lago's FS scenery Enhancer is a winner.

More Information

Publisher: LAGO S.r.l.

Website: www.lagoonline.com/ENG/default.asp

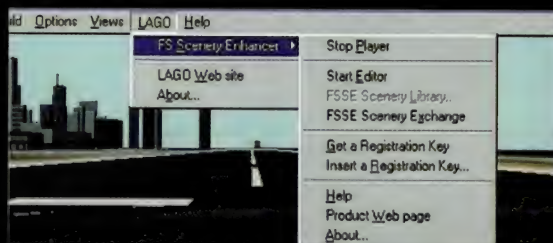
SRP: 25 Euros (about \$22 US)



Our inserted object



Library module



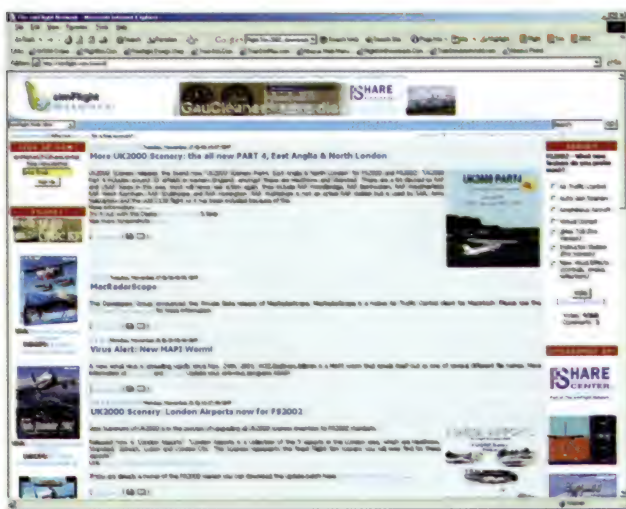
FS2002 new menu

Web Watch

Welcome ladies and gentleman (pilots too!) to this issue's Webwatch. Today we will be buzzing the latest and greatest the Internet has to offer with a particular focus on FS2002. Since the release of FS2002, new planes and tweaks are popping up faster than an overspeed indicator would go off in a nosedive! We'll focus today on only a few sites, but will look at them in detail.

www.simflight.com

Set your NAV1 radio to www.simflight.com and take off when ready.



Simflight offers a good place to stop by and download some of the latest FS2002 files including scenery and aircraft, but in addition to the standard downloads, there is real-world info available that will keep all you simmers on your toes.

You can easily navigate the site by using the small (and I emphasize small) bar at the top. Click the FS2002 FAQ link to read a set of about 28 questions unique to FS2002 that a lot of users are asking including:

How do I disable the warning message on startup about non-compatible modules?

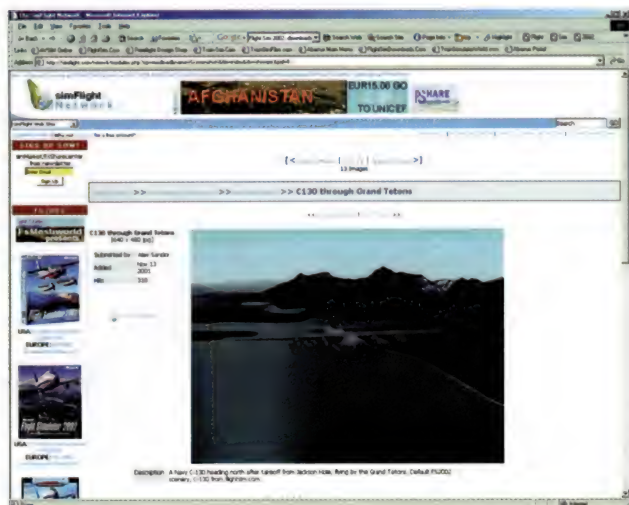
How do I open the FS2002 aircraft bitmaps to repaint them?

How can I set ATC to only see the ATC window when messages require my response?

What is the default key to open/close aircraft doors?

Internet Sites for Simmers

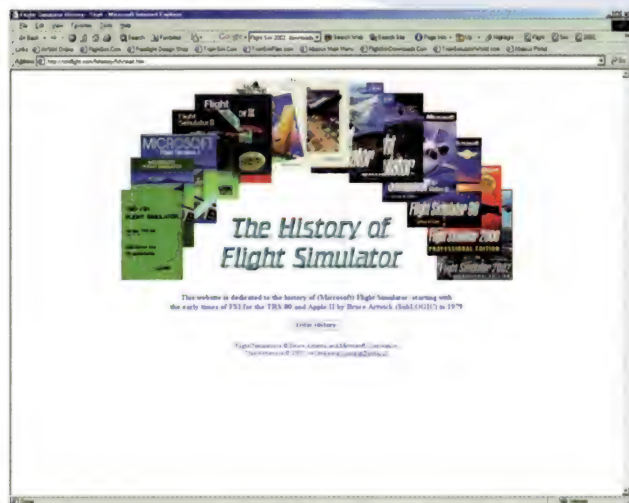
Once you have learned all there is to know about FS2002 from the FAQs, you can stop by the Screenshot Competition and see what FS2002 (or FS2000) is capable of graphically.



NOTE:

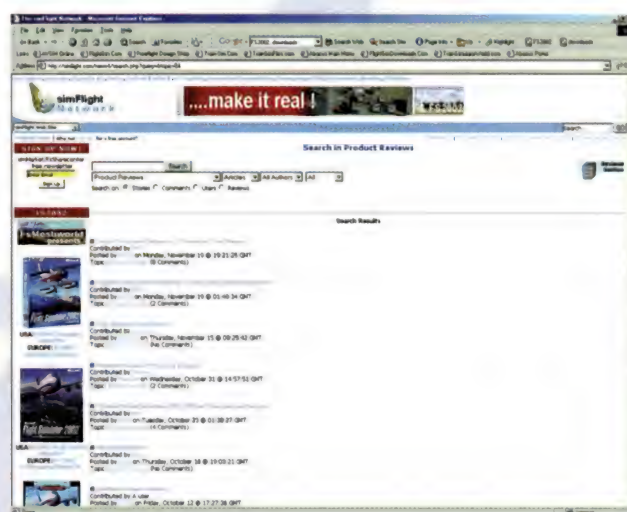
If you're wondering how users get these fancy screen shots, you can simply set up your plane in FS with a fancy background using the Spot View, then press the PRINT SCREEN button on the top right of your keyboard. Then, you can open a paint program and use the Edit | Paste command (in Paint Shop Pro, use the Edit | Paste | As New Image, or use the Capture menu and assign a special key to take the screen capture). Now you can save the image in any format you want.

I stopped by the History of Flight Simulator link to see what it offered and found myself reading through the timeline and learning all about the good 'ol days of FS!



Be sure to look for the screen shots of the old FS sims!

For a set of product reviews, visit the Reviews page



www.simviation.com

For the next leg of our flight, set your browser to: www.simviation.com and contact the tower when ready...

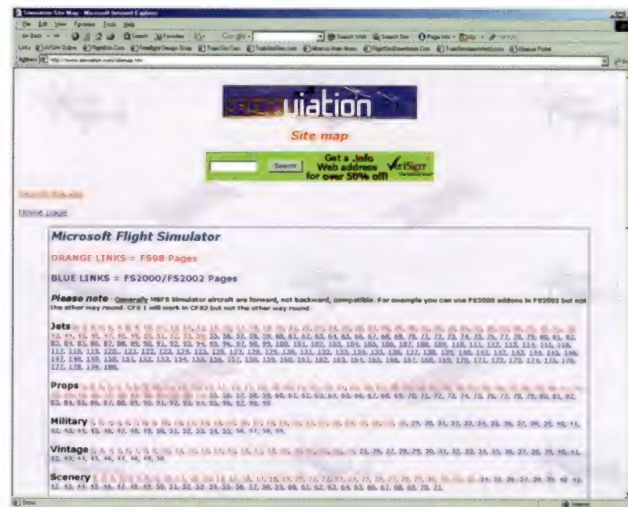


Insert simv-main.tif >

I found Simviation to be an excellent site with an unbelievable amount of content. At first glance, it seems like any other FS site with a few downloads, articles and so on, but as you begin to hit some of the links, you will find yourself in the depths of a massive FS website. At first glance, I checked out the download section to see what it had to offer.



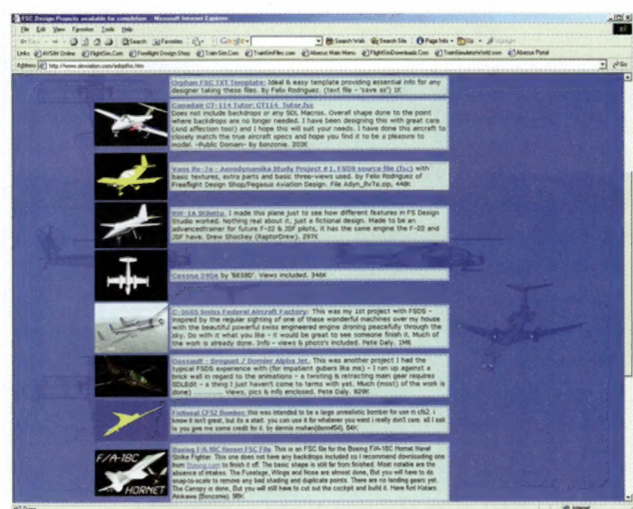
This seemed to be on par with most other sites in that it offered about every conceivable category of aircraft, scenery, sounds, panels and so on. I then decided to check out the Site Map and see if I could get a better feel for what was on the site. This actually did not prove to be of much help though.



After almost giving up and moving on to another site, I stopped back at the main page and click the Aircraft Design link and it seemed to open up a whole new world.



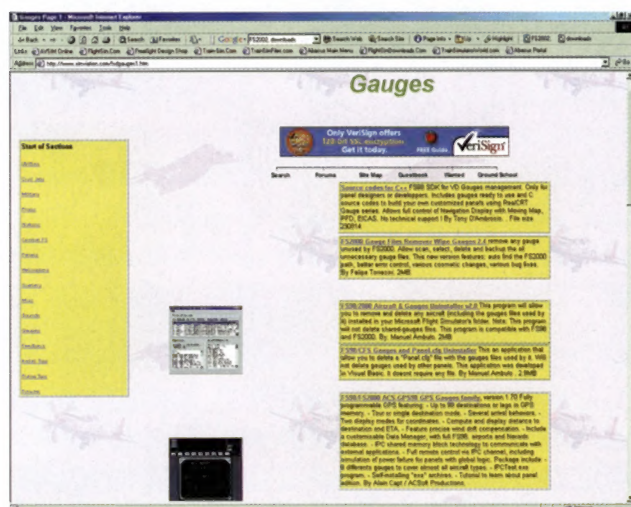
I found links on this page to downloads and information all in one place. I bookmarked the page immediately. The aircraft design page has info on FS Design Studio, Aircraft Factory 99, GMax, Aircraft Animator, various flight dynamic editors, graphics and repainting, blank project files for FS Design Studio and AF99, and much more. On the top of the page, I clicked the "Orphan FSC page" to adopt an abandoned FSC. (An FSC is a project file from FS Design Studio – you can download it and change it anyway you want and produce it yourself or use parts from it in your own designs).



optional* !>

If you are looking for projects, utilities or info, this is the place to visit!

After I secured my jaw back to its normal "off the floor" position, I carried on and visited the Gauges link on the left of the page. Now I know my way around a panel and I know what is involved to create your own gauges and I found this page to be impressive.



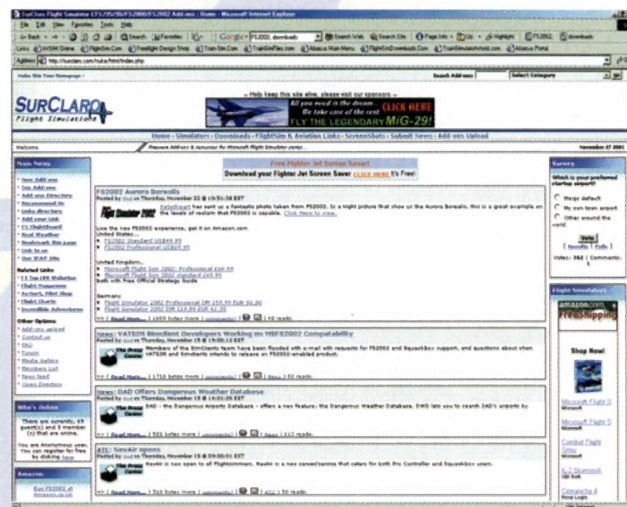
I expected to see a list of various gauges that I could download and was hoping for a picture of them before downloading but I got more! This site not only offers various gauges, but it also has utilities to 'clean' your gauges folder by removing unused gauges as well as C++ source code for making your own gauges – unbelievable!

As you can imagine, this is an excellent site and well worthy of a bookmark or even a permanent link on your browser's Links bar. There were a few shortcomings that I found that I will mention but won't hold against them. The site was rather difficult to navigate. It had a lot of great content, but it was not easily accessible unless you took the time to dig for it. On most of the pages of the site, there is a yellow box as you can see from the images that has links to other portions of the site, but the box was not always the same size or font and is a lot of material missing from it. It would be a real asset to the site to improve navigation but not loose any content!

Other Important FS Sites

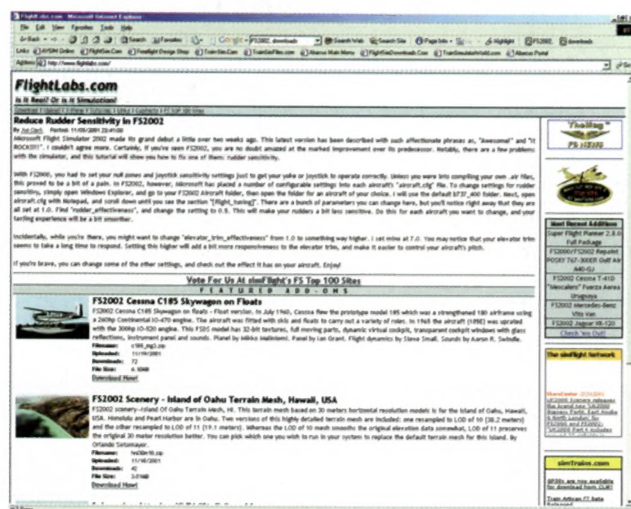
If you haven't had enough of the Internet for this issue, I recommend stopping by these important FS sites as well:

<http://surclaro.com>



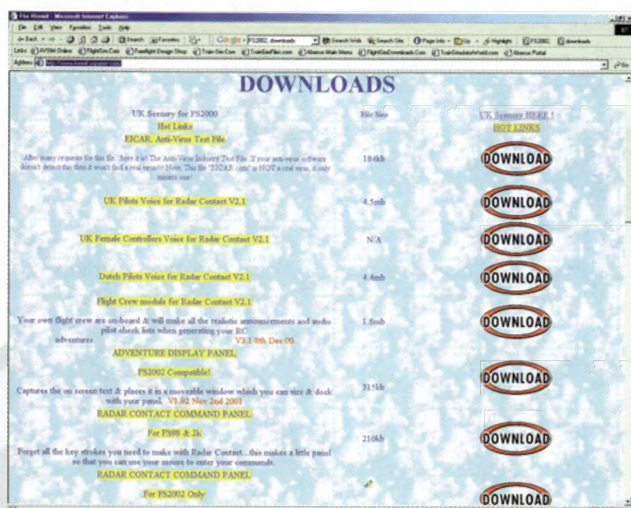
This site has a lot of general FS information with many links, downloads, screenshots and more.

www.flightlabs.com –



This site boasts aircraft, panel and scenery downloads for FS2002 as well as aircraft for X-plane. It also includes an extensive Links page.

www.hermit.supanet.com



This site offers a whole slew of downloadable utilities, new Radar Contact voices and display panels, new effects, new moon raindrops, snowflakes, and more!

I hope you have enjoyed your journey today! If you have a favorite website, or if you run a Flight Sim related website that you would like to see mentioned WebWatch, drop me a line at: adam@flightsimulatorworld.com and I will be happy to include it!

Did You Know?

Qantas started the first around-the-world passenger service by an airline in 1958 (Qantas is an acronym for Queensland And Northern Territory Aerial Services).



Also, Qantas, established in 1920, is the world's second oldest airline (KLM is the oldest).

The largest aircraft of all time was the Spruce Goose, designed by Howard Hughes.

Building the *Spirit of St. Louis* required only two months at a cost of \$10,580 and was completed on April 29, 1927. It was, of course, the aircraft flown by Charles Lindbergh in the first solo, non-stop transatlantic flight. It was named in honor of Lindbergh's financial backers in St. Louis, Missouri.

The average twenty-year-old 747 has been pushed backwards from the gate about 2,300km! Note that this would be roughly the same for most international airliners, with the higher cycle domestic airliners being up to four to six times more than that.

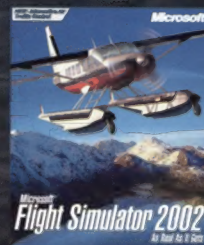
The Capitol Records building in Los Angeles, California, built to resemble a stack of records, has a red airplane-warning light on top that flashes out the word "Hollywood" in Morse code about every twenty seconds.

Microsoft

Admittedly, there will be times
when our interactive ATC won't be necessary.



No need for ATC when landing on Lake Erie. Or, taking off from the Amazon for that matter. But, fly over realistic cities or into crowded airspace, and the new interactive ATC is right there with you. You're flying in the real world with FlightSim 2002. Your perspective from the cockpit is 3D. Contrails flow from your engine. And waterways from around the world await. Climb in the cockpit. It's time to fly. microsoft.com/games/fs2002



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NOTES: All customers who purchase Fly to Hawaii for Flight Simulator 2000 will receive a Fly to Hawaii for Flight Simulator 2002 Upgrade CD-ROM from the publisher - ABSOLUTELY FREE!



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